# Distribution, Abundance and Status of Birds in the Hunter Estuary

*by*

*Chris Herbert*
*Hunter Bird Observers Club*
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# SUMMARY

The Hunter Estuary is the most important estuary along the New South Wales coast for both the abundance and diversity of its avian fauna. However, since records commenced in the 1970s, there has been a significant decline in the abundance of birds accompanied by a slight decline in species diversity. As the formulation of an estuary management plan is in progress it was considered necessary to review the status of birds in the estuary before management options were adopted. This report is essentially a compilation study of Hunter Bird Observers Club data and individual members' records, and brings together all relevant data concerning the distribution, abundance and status of birds throughout the Hunter Estuary. Owing to the magnitude of the data compilation and the three months time limit, only limited interpretation of the data was envisaged. Where sufficient data was available graphs were produced for each species. This provided information on seasonal, medium-term (1999 to 2007) and longer-term (1970 to 2007) trends for the abundance of those species.

Fifty wetland locations are documented for the estuary and a total of 66 'Significant Species' that inhabit the estuary are discussed. Significant Species are those species listed as vulnerable or endangered under the NSW Threatened Species Conservation Act 1995; listed on the agreements to protect migratory birds and their habitat between the Governments of Japan and Australia (JAMBA) and/or China and Australia (CAMBA); or present in sufficient numbers to qualify the Hunter Estuary as an 'Important Bird Area'. Another 84 'Other Species' of birds supported by the estuary are discussed.

There are many ways to assess the relative importance of wetlands in the estuary. A fast and expedient method, applied herein, uses the number of estuary-frequenting avian species recorded at each location. Hence, all wetlands are ranked according to the number of 'Significant Species' recorded. The top ten wetlands are: Stockton Sandspit, ranked highest with 38 Significant Species; followed by the Kooragang Dykes; Swan Pond; the Hunter Wetlands Centre; Deep Pond; Pambalong Nature Reserve; Stockton Channel; Wader Pond; Hexham Swamp; and Fern Bay. Many of these locations are either artificially constructed or greatly modified wetlands! The success of artificially constructed wetlands in providing habitat for birds is reassuring, showing that managed or newly created habitats are an important and necessary part of environmental management.

This method of assessing the relative importance of each wetland should be regarded as limited. It does not take into account wetlands that may be important because they contain only a few endangered or vulnerable species that may not occur at other wetlands. In addition, wetlands may have particularly large numbers of only a few species or may be important as a breeding or roosting area. Each wetland is unique. Variations in water-level, that depend on location within the estuary and local weather conditions, are vital to sustain biodiversity. The abundance and diversity of birds change dramatically for each wetland depending on seasonal and temporal variation. It is important for the viability of the Hunter Estuary, that a complex variety of individual wetlands be maintained. Thus, the importance of wetlands should be both individually and collectively assessed.

The largest rookeries (breeding sites) are located at:

- the Hunter Wetlands Centre
- Seaham Swamp Nature Reserve
- Market Swamp
- Newcastle Wetlands Reserve.

The largest roosting sites according to the number of roosting birds are:

- Stockton Sandspit

- Kooragang Dykes
- all Ash Island Ponds
- the Hunter Wetlands Centre
- Irrawang Swamp
- Tarro Swamp
- Tomago Ibis Roost
- Windeyers Reach Nocturnal Roost.

However, there are roost sites that may not be important based on numbers, but are important because they host species that do not roost elsewhere, such as Fern Bay (Terek Sandpipers) and Stony Point (Ruddy Turnstones), or are important during different seasons such as the Juncus Swamp (winter nocturnal roost for Bar-tailed Godwits), etc.

Different species may use different foraging areas. However, the most important foraging areas in terms of the number of birds are:

- Fullerton Cove
- North Arm Sandflats
- Kooragang Dyke Ponds
- Stockton Sandspit foreshore
- Deep Pond
- Swan and Wader Ponds (Area E, Ash Island)

The most numerous Significant Species, with numbers often in excess of 1,000, are: Straw-necked Ibis, Australian White Ibis, Cattle Egret, Red-necked Avocet, Chestnut Teal; and the migratory shorebirds, Bar-tailed Godwit, Sharp-tailed Sandpiper, Curlew Sandpiper and Red Knot. However, 14 Significant Species (mostly migratory shorebirds) have suffered numerical declines since records began in 1970. Two species are virtually locally extinct: Double-banded Plover and Lesser Sand Plover (both small, migratory shorebirds). Only two species have actually increased in numbers in the Hunter Estuary since 1970: Red-necked Avocet and Sooty Oystercatcher (both Australian endemic shorebirds).

The most numerous of the Other Species of estuary-frequenting birds (with numbers sometimes exceeding 1,000) are: Grey Teal, Silver Gull and Black-winged Stilt. Species often recorded in many hundreds are: Black Swan, Hardhead, Pink-eared Duck, Pacific Black Duck, Australasian Grebe, Australasian Shoveler and Eurasian Coot.

The comprehensive and regular Hunter Bird Observers Club monthly shorebird counts have been vital for understanding the recent status of birds in the lower, mainly saline, parts of the Hunter Estuary. However, there is a great need to carry out regular counts at all the swamps discussed herein. If the counts could be undertaken simultaneously with the monthly shorebird counts, a total population census for the entire estuary could be obtained. Management decisions could then be based on even more comprehensive data.

The Hunter Bird Observers Club submitted a proposal to Birds Australia for the Hunter Estuary to be considered as an 'Important Bird Area'. Birds Australia has accepted the nomination and is now seeking ratification by Birdlife International. The Hunter Estuary qualifies as an Important Bird Area because it contains a population of the endangered Australasian Bittern and several species in excess of 1% of their global populations: Red-necked Avocet; Chestnut Teal; Straw-necked Ibis; Eastern Curlew; Sharp-tailed Sandpiper; and Latham's Snipe.

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## APPENDICES (on CD)

# 1.0 INTRODUCTION

Although the Hunter Estuary is only one of several large estuaries on the New South Wales coast, it is host to the largest number of migratory and non-migratory shorebirds in the state. Numerous saline and freshwater wetlands associated with the estuary also support a diverse non-passerine avifauna of wildfowl, herons, ibis, bitterns, spoonbills, crakes, rails, quails, terns, gulls, kingfishers, diurnal raptors and owls. Wetland-frequenting passerine birds such as reed warblers, grassbirds, chats and cisticolas are common.

Large parts of the estuary have been developed for industry and port-related activities, while surrounding land has been developed for urban settlement and agriculture (mostly cattle grazing, and dairying in the past). Several swamps previously drained for grazing purposes are now in the process of being rehabilitated to wetlands.

The objective of this study is to review the distribution, abundance and status of avian species in the Hunter Estuary using Hunter Bird Observers Club (HBOC) data and collective knowledge by:

1. Identifying all significant wetlands in the lower Hunter Estuary in the area shown in **Figure 1.0**;
2. Discussing the distribution and abundance of Significant Species based on available HBOC records (see **Table 3.0 and Appendix 1**);
3. Discussing the distribution and abundance of Other Species based on available HBOC records (see **Section 4.0 and Appendix 1**);
4. Discussing the present status of Significant Species and comparing the present status with historical records, where available;
5. Presenting HBOC records as appendices on CD.

Hunter Bird Observers Club records, on which this study is based, are presented as appendices on CD. This study considers the Hunter Estuary from the mouth of the Hunter River, at Nobbys Head, upstream to Grahamstown Reservoir, up the Williams River as far as Seaham Swamp Nature Reserve, and west to Woodberry Swamp and Pambalong Nature Reserve (**Figure 1.0**).

Fifty significant wetland locations are discussed first (**Section 2.0**), followed by a discussion of 66 S*ignificant Species* (**Section 3.0**) and then 84 *Other Species* (**Section 4.0**). Where records permit, the present status of Significant Species and Other Species is compared to their historical status.

Hunter Bird Observers Club records have been compiled from several sources:

1. HBOC's data base consisting of records made by groups of observers during club field excursions (mostly 1990s to 2007) (**Appendix 2**);
2. Hunter Region of New South Wales Annual Bird Reports which record individual observations and specific project locality observations (1993-2005) (**Appendix 6**);
3. HBOC's monthly shorebird counts (1999-2007) (**Appendix 3**);
4. Individual members records (written records) and observations (pers. comm.).

Data for each wetland locality was compiled onto Excel spreadsheets, which are included as **Appendix 2** on CD.


**Figure 1.0.** Significant wetlands in the Hunter Estuary.

# 2.0 SIGNIFICANT HUNTER ESTUARY WETLANDS

Fifty wetlands where *Significant Species* (see **Section 3.0**) or significant numbers of *Other Species* (see **Section 4.0**) have been consistently recorded are discussed below. Locations are listed from the mouth of the Hunter Estuary upstream along the Hunter River until its junction with the Williams River, and then up the Williams River as far as Seaham (**Figure 1.0**). There are many important wetlands peripheral to the estuary upstream of the Hunter River/Williams River junction that are beyond the scope of this discussion, such as the decommissioned Morpeth Sewage Treatment Works, Walka Water Works and Wentworth Swamp to name a few. Morpeth and Walka are regularly monitored by HBOC members (see Stuart 1994-2006).

Shorebird localities in the lower saltwater parts of the Hunter Estuary and freshwater swamps at places such as the Hunter Wetlands Centre have been regularly monitored over a number of years and are visited often. Consequently, these areas appear to have considerably higher abundance and diversity of species than the less visited parts of the estuary. Caution must be exercised when comparing wetlands because, to some extent, the abundance and diversity of species may be a function of the rate of observations.

Where records permit, the maximum number of birds observed at each wetland is shown in brackets after each species (mostly from records since 1993, although some records date from the 1980s). A qualitative estimate of the rate of recording each species is indicated using the progressive terms: *rarely recorded, occasionally recorded, moderately often recorded, often recorded, frequently recorded and regularly recorded*. In some cases, there may be no recorded data available, but general numbers are known from personal communications that have not been recorded in HBOC's database. The terms mentioned above are then suffixed with the term *observed*, instead of *recorded*. See **Appendix 2** on CD, for records of species occurring at each wetland locality (listed alphabetically under wetland name).

Locality figures attempt to show the main foraging areas (outlined in yellow), used by birds in each area. Many waterbirds also roost or loaf between feeding sessions at these locations. Roosting areas, shown in orange, depict only those localities recognised primarily as roost sites. All locality figures are oriented with north at the top of the page.

## 2.1 NEWCASTLE HARBOUR

### 2.1.1 Stony Point

Stony Point, a boulder-lined river foreshore at the landward end of Nobbys Breakwater, hosts roosting and foraging Sooty Oystercatchers, Ruddy Turnstones, Silver Gulls and roosting terns (**Figure 2.1.1**). The adjacent sandy foreshore supports only Silver Gulls and Crested Terns. Turnstones sometimes also roost on the concrete parapet immediately below the walkway to the breakwater. During summer, White-winged Black Terns, Common Terns and Little Terns forage around the harbour and roost on navigation buoys. Regular monitoring of Stony Point commenced during 2006 only after it was recognised as an important area for shorebirds. Eight Significant Species have been recorded here.

*Significant Species:*

White-bellied Sea-Eagle, (4), moderately often observed
Whimbrel (1), occasionally recorded
Ruddy Turnstone (14), often observed
Sooty Oystercatcher (13), often observed
Crested Tern (27), frequently observed, (100+) at adjacent Horseshoe Beach
Common Tern (200), moderately often observed
Little Tern (20), moderately often observed
White-winged Black Tern (42), moderately often observed


**Figure 2.1.1.** Stony Point.

### 2.1.2 Throsby Creek

Although the lower reach of Throsby Creek is dominated by industrial development the stretch upstream of Cowper Street Bridge has a few stands of mangrove that provide a buffer to the surrounding urban development (**Figure 2.1.2**). A surprising variety of wetland-dependant birds use the area, notably Striated Heron, Nankeen Night Heron and Red-capped Plover. An Intermediate Egret has been recorded nesting at Throsby Creek. This is quite significant as there are few records of this species nesting in the Hunter Estuary. Five Significant Species have been recorded at Throsby Creek.

*Significant Species:*

Great Egret (2)
Bar-tailed Godwit (1)
Eastern Curlew (1)
Ruddy Turnstone (6-20)
Curlew Sandpiper (6-20)


**Figure 2.1.2.** Throsby Creek.

## 2.2 NORTH ARM - HUNTER RIVER WETLANDS

### 2.2.1 Stockton Channel

The eastern side of the North Arm of the Hunter River extending from Stockton Bridge south to a small boat harbour and launching ramp provides a variety of habitats (**Figure 2.2.1**). Oyster reefs and surrounding mudflats occur immediately south of Stockton Bridge. South from Stockton Bridge, the mangrove-lined foreshore changes to a boulder-lined foreshore north of a small-boat harbour. A rusting wreck off the mangrove-lined foreshore provides a roost site for Grey-tailed Tattlers, Common Sandpipers, pelicans and cormorants. Pacific Golden Plovers and usually one, or occasionally two, Common Sandpipers favour a high-tide roost along the boulder foreshore extending approximately 100m south from a dilapidated jetty towards the small-boat harbour. These birds forage northwards from the roost area along the foreshore to Stockton Bridge.

A small number of Eastern Curlew, Whimbrel, Bar-tailed Godwit, Black-winged Stilt and Masked Lapwing forage on the oyster bank and surrounding mudflats immediately south of Stockton Bridge. Other birds observed roosting or foraging along the boulder foreshore include Striated Heron, Ruddy Turnstone, Sooty Oystercatcher, Pied Oystercatcher, Silver Gull and Great Egret. A variety of terns forage by flying over Stockton Channel. Twenty-two Significant Species have been recorded in Stockton Channel.

*Significant Species:*

Great Egret (2), moderately often recorded
Australian White Ibis (6), often recorded
Straw-necked Ibis (13), occasionally recorded
White-bellied Sea-Eagle (1), occasionally observed
Whimbrel (7), moderately often recorded
Eastern Curlew (4), moderately often observed
Bar-tailed Godwit, moderately often recorded
Common Greenshank (3), occasionally recorded
Terek Sandpiper (10+), frequently recorded in summer
Common Sandpiper (4), moderately often recorded
Grey-tailed Tattler (27), frequently recorded in summer
Ruddy Turnstone (3), occasionally recorded
Red-necked Stint (4), occasionally recorded
Pacific Golden Plover (33), regularly recorded in summer
Pied Oystercatcher (2), occasionally recorded
Sooty Oystercatcher (1), one record
Caspian Tern, occasionally observed
Crested Tern (22), moderately often recorded
White-fronted Tern (1), one record
Common Tern (13), occasionally recorded
Little Tern (1), one record
White-winged Black Tern, occasionally observed


**Figure 2.2.1.** Stockton Channel.

### 2.2.2 Stockton Sandspit

Stockton Sandspit is one of the most important high-tide roosts for shorebirds in the Hunter Estuary (**Figure 2.2.3**). The lagoon, saltmarsh and surrounding mudflats are also important foraging areas. Since its rehabilitation in 2002 the sandspit is of equal importance to the Kooragang Dykes, which prior to that time, was the premier high-tide roost. The significance of the rehabilitation, which involved removing fringing mangroves and vegetation from the sandspit in September 2002, can be judged by the spectacular increase in usage by Red-necked Avocets and Bar-tailed Godwits after this date (**Figures 3.7.7c and 3.6.3c**). About 23 species of migratory shorebirds and 10 species of non-migratory shorebirds use the sandspit. When Red-necked Avocets are present the total number of birds at any one time can be in excess of 5,000.

Stockton Sandspit was created during the late 1960s, from dredge spoil to support the northern abutments of Stockton Bridge, which was completed in 1971. The sandspit is situated at the southern extremity of the Kooragang Nature Reserve and is part of the Kooragang Wetland Rehabilitation Project (KWRP). A shallow intertidal lagoon was created on the sandspit in 1995 and the sandy margins are vegetated with saltmarsh. Both the lagoon and saltmarsh are used for roosting and foraging. On the northern side of the sandspit a river-side beach and sandy mudflats provide additional roosting and foraging areas for shorebirds, depending on the tide.

Since rehabilitation in September 2002, as many as 5,000 non-migratory shorebirds, mostly avocets and stilts, and a declining number of migratory shorebirds, from about 2,000 in 2003 to 600 recently, can be observed there. Soon after rehabilitation Bar-tailed Godwits were the most abundant migratory shorebird at the sandspit (**Figure 3.6.3c**). But as the bare sand became more vegetated their numbers waned and they gradually returned to the Kooragang Dykes to roost. Eastern Curlew and Red-necked Avocet are, at present, the most abundant species that regularly roost at Stockton Sandspit during diurnal high tides. Eastern Curlew roost in saltmarsh, on bare shelly sand, around muddy margins of the lagoon and, occasionally, in the lagoon itself. Red-necked Avocet roost in shallow water margins of the lagoon. Curlew Sandpiper and Bar-tailed Godwit also roost in shallow margins of the lagoon, usually immediately shoreward of the avocets. Up to 12 species of migratory shorebirds have been regularly recorded at the sandspit during shorebird surveys including Black-tailed Godwit, Bar-tailed Godwit, Whimbrel, Eastern Curlew, Marsh Sandpiper, Common Greenshank, Common Sandpiper, Great Knot, Red Knot, Red-necked Stint, Sharp-tailed Sandpiper and Curlew Sandpiper. Additional species recorded occasionally at other times include: Pacific Golden Plover, Grey Plover, Pectoral Sandpiper and Broad-billed Sandpiper. Non-migratory shorebirds include Red-necked Avocet, Black-winged Stilt (nesting records), Red-capped Plover (nesting records), Masked Lapwing (nesting records) Pied Oystercatcher and Beach Stone-Curlew (one sighting). In response to repeated disturbance shorebirds often move between Kooragang Dykes and Stockton Sandspit. Pacific Golden Plovers that in previous years used to roost in the saltmarsh have recently reappeared.

At high tide the lagoon is the preferred roost for as many as 5000 Red-necked Avocet, the most numerous species that uses the sandspit. Although, on rare occasions, when inland rain provides the opportunity for the avocets to breed, numbers can fall to zero. Only a small number of Black-winged Stilt roost and forage in the lagoon, preferring the Kooragang Dykes for roosting at high tide. Red-capped Plovers, Masked Lapwings and Black-winged Stilts nest in the saltmarsh. Pied Oystercatchers roost on the beach berm and forage on the mudflats. Sooty Oystercatchers forage on the off-lying oyster banks. The vulnerable Beach Stone-Curlew has been observed on mudflats off the beach.

Eastern Curlew is the most numerous migratory shorebird using the sandspit on a regular basis. They tend to prefer roosting in saltmarsh and bare mudflats fringing the lagoon, or when lagoon levels are high, in the shallow margin of the lagoon . Although Bar-tailed Godwits prefer to roost on the Kooragang Dykes they can be present occasionally on the sandspit in numbers exceeding the curlews, particularly when disturbed from the dykes. Thirty-eight Significant Species have been recorded at Stockton Sandspit.

*Significant Species:*

Chestnut Teal (48), often recorded
Great Egret (3), moderately often recorded
Glossy Ibis (6), rarely recorded
Australian White Ibis (54), often recorded
Straw-necked Ibis (50), occasionally recorded
Osprey (1), rarely observed
White-bellied Sea-Eagle (2), moderately often recorded
Black-tailed Godwit (425), moderately often recorded in summer
Bar-tailed Godwit (1,000), often recorded
Whimbrel (22), moderately often recorded
Eastern Curlew (440), regularly recorded in summer, (1,000 - 17/3/91)
Marsh Sandpiper (15), rarely recorded
Common Greenshank (6), occasionally recorded
Terek Sandpiper, usually foraging off the sandspit
Grey-tailed Tattler, (30+), usually foraging off the sandspit on falling tide
Ruddy Turnstone (1), one record
Great Knot (50), often recorded
Red Knot (400), moderately often recorded
Sanderling (1), rarely observed
Little Stint (1), rarely recorded
Red-necked Stint (49), often recorded
Pectoral Sandpiper, occasionally observed
Sharp-tailed Sandpiper (480), often recorded
Curlew Sandpiper (400), often recorded
Broad-billed Sandpiper (4), rarely recorded
Ruff (1), rarely recorded
Beach Stone-Curlew (1), one record
Pied Oystercatcher (28), Br, moderately often recorded
Sooty Oystercatcher (2), occasionally observed on oyster bank
Red-necked Avocet (7,000), regularly recorded
Pacific Golden Plover (28), rarely recorded
Grey Plover (1), rarely recorded
Double-banded Plover (2), rarely recorded
Lesser Sand Plover (21), occasionally recorded, (70 - 23/1/94)
Greater Sand Plover (2), rarely recorded
Caspian Tern (15), moderately often recorded
Crested Tern (20+), moderately often recorded
Little Tern (30), (23/1/94), rarely recorded until 2006/7 when as many as 15 observed

### 2.2.3 Fern Bay

Fern Bay is located immediately northeast of Stockton Sandspit (**Figure 2.2.3**). Survey sites include boulders lining the river foreshore adjacent to Fullerton Road, wooden oyster racks in the bay, and mangroves along its margin. As many as 79 migratory shorebirds have been recorded roosting in Fern Bay. Grey-tailed Tattler, Terek Sandpiper and Whimbrel are the only migratory shorebirds regularly observed. Grey-tailed Tattlers and Terek Sandpipers roost on boulders lining the shoreline immediately below Fullerton Road and on wooden oyster racks out in the bay. Whimbrel roost in mangroves along the eastern shore of Fern Bay. Tattlers, Terek Sandpipers and other shorebirds such as curlews, godwits, avocets and stilts forage at low tide on exposed fringing mudflats.

The few non-migratory shorebirds recorded at Fern Bay include foraging Red-necked Avocets, Black-winged Stilts, a single Pied Oystercatcher and occasional Masked Lapwings. Cormorants, Darters, pelicans, Sacred Kingfishers and Mangrove Gerygones are often observed. Twenty Significant Species have been recorded.

*Significant Species:*

Chestnut Teal (15)
Great Egret (2), often recorded
Australian White Ibis (500+), frequently recorded, nocturnally roosts in mangroves
Osprey (1), occasionally recorded
White-bellied Sea-Eagle (2), often recorded
Bar-tailed Godwit (32)
Common Greenshank (1)
Whimbrel (18), occasionally recorded
Terek Sandpiper (68), regularly recorded in summer
Grey-tailed Tattler (40), regularly recorded in summer
Wandering Tattler (1), one record
Common Sandpiper (1), occasionally recorded
Red Knot (4)
Sharp-tailed Sandpiper (20)
Curlew Sandpiper (1)
Broad-billed Sandpiper (1)
Pied Oystercatcher (1), moderately often recorded
Red-necked Avocet, often observed
Pacific Golden Plover (1)
Crested Tern (1)


**Figure 2.2.3.** Stockton Sandspit and Fern Bay.

### 2.2.4 Kooragang Dykes and Dyke Ponds

Kooragang Dykes is a 1.5 kilometre-long rock retaining wall along the western bank of the North Arm of the Hunter River (**Figure 2.2.4**). It was constructed during the 1960s to reclaim land for industrial use, using slag from the former BHP steelworks. However, the land reclamation project did not proceed beyond construction of the retaining wall. Thus the Dykes now enclose intertidal areas that provide significant foraging habitat for waders. In addition, the Dykes are an extremely important high-tide roost for shorebirds. Since 1984, the Dykes and the intertidal area behind the Dykes have been included in the Kooragang Nature Reserve. The broad surface of the Dykes is two to three metres wide with side slopes that provide some shelter from prevailing winds. During average tides there is ample roosting room for all shorebirds. However, summer king tides almost cover the Dykes, leaving only small islands of exposed rock and grassy elevated areas. Many birds then roost by standing in shallow water and on driftwood stranded on the Dykes.

When the Dykes were first constructed, it was possible to drive the full length of the rock wall, and land-based fishermen enjoyed easy access to 1.5 kilometres of the Hunter River North Arm. However, over the years, several breaches developed in the rock wall, restricting car access to the southernmost 100 metres adjacent to Stockton Bridge and encouraging shorebirds to begin roosting. Breaches allow tidal flow into and out of ponds behind the Dykes, and also provide access to shallow draft boats. Commercial fishermen currently fish the area behind the Dykes at high tide when boat access is possible. The Dykes, and particularly the breaches, are subject to erosion from tidal currents, waves, large boat wakes and flood flow. Mangroves are beginning to grow on various sections of the Dykes, which will eventually render these sections untenable for roosting shorebirds.

At times more than 5,000 shorebirds roost on the Kooragang Dykes at high tide. However, this number has been decreasing over the period of HBOC's monthly shorebird counts (1999 to 2007) because the Red-necked Avocets and most of the Eastern Curlews moved to Stockton Sandspit since its rehabilitation in 2002. Also there has been a noticeable general decline in the total number of Eastern Curlew and Bar-tailed Godwit in the estuary over the same period.

During summer more than 3,000 migratory shorebirds and as many as 3,000 non-migratory shorebirds have been recorded roosting on the Dykes. In addition to the Significant Species listed below, the following birds are usually recorded: Black-winged Stilts, Masked Lapwings. Australian Pelicans, Silver Gulls, Gull-billed Terns, Royal Spoonbills, Little Pied Cormorants, Little Black Cormorants, Great Cormorants and Pied Cormorants. 32 Significant Species have been recorded.

*Significant Species:*

Chestnut Teal (107), usually recorded
Great Egret (4), frequently recorded
Australian White Ibis (56), frequently recorded
Osprey (1), occasionally recorded
White-bellied Sea-Eagle (2), frequently recorded
Black-tailed Godwit (364), regularly recorded in summer
Bar-tailed Godwit (2,019), regularly recorded
Whimbrel (59), regularly recorded
Eastern Curlew (530), regularly recorded
Marsh Sandpiper (280), regularly recorded in summer
Common Greenshank (315), regularly recorded in summer
Terek Sandpiper (1), occasionally recorded in summer
Common Sandpiper (2), rarely recorded

Grey-tailed Tattler (4), occasionally recorded in summer
Ruddy Turnstone (6), occasionally recorded in summer
Great Knot (10), moderately often recorded in summer
Red Knot (1,110), often recorded in summer
Red-necked Stint (91), moderately often recorded
Sharp-tailed Sandpiper (225), moderately often recorded
Curlew Sandpiper (461), regularly recorded in summer
Broad-billed Sandpiper (1), rarely recorded
Ruff (1), one record in summer
Beach Stone-curlew (1), one record
Pied Oystercatcher (24), frequently recorded
Sooty Oystercatcher (11), frequently recorded
Red-necked Avocet (3,000), regularly recorded
Pacific Golden Plover (304), regularly recorded in summer
Grey Plover (1), rarely recorded
Caspian Tern (19), frequently recorded
Crested Tern (30), regularly recorded
Common Tern (60), occasionally recorded
Little Tern (3), moderately often recorded

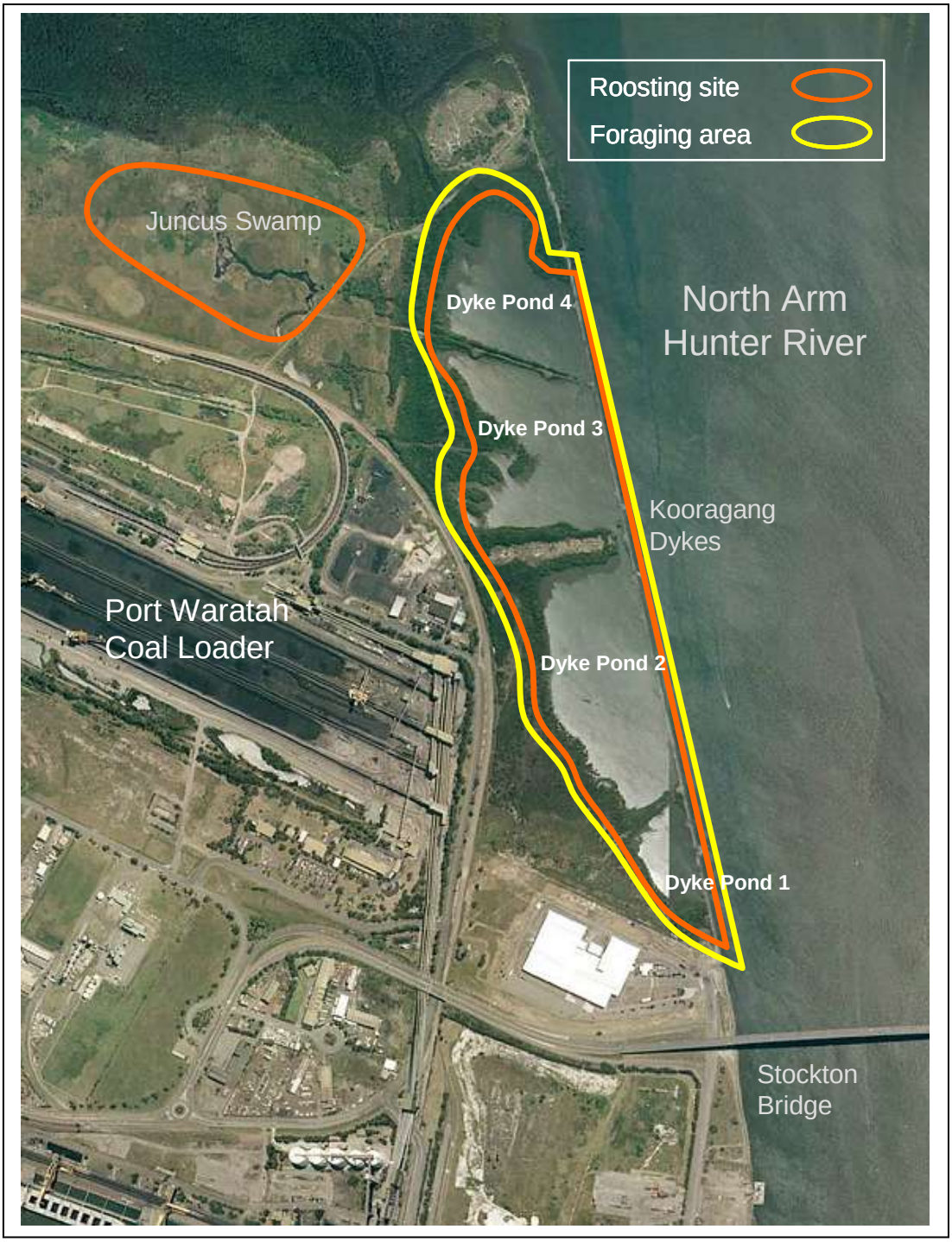



**Figure 2.2.4.** Kooragang Dykes, Dyke Ponds 1-4 and Juncus Swamp.

### 2.2.5 Juncus Swamp

Prior to the 1970s the Juncus Swamp was an important area for shorebirds (**Figure 2.2.4**). Since the development of the industrial area and construction of the industrial railway, tidal flow along Mosquito Creek was terminated and the adjacent Juncus Swamp was converted into a freshwater reed swamp dominated by *Phragmites australis, Typha orientalis* and *Juncus acutus*. Five Australasian Bitterns, observed in 1974, indicate that it is now prime bittern habitat. In addition, there have been recent observations of Bar-tailed Godwits roosting at night in the remaining open water during winter.

*Significant Species:*

Australasian Bittern (5)
Bar-tailed Godwit (312), nocturnal winter roost

### 2.2.6 North Arm Sandflats

North Arm Sandflats is an extensive area of muddy shallow water with exposing sandflats on the eastern side of the North Arm between Stockton Sandspit/Fern Bay to the south and Sandy Island to the north (**Figure 2.2.6**). At low tide the area is an important foraging area for those migratory and non-migratory shorebirds that do not proceed further up the estuary to forage in Fullerton Cove. At intermediate-tide heights the emerging sandflats and an oysterbank are used as subsidiary roosts by Pacific Golden Plovers and also as a staging roost and foraging area by many other species of shorebirds that move from their high-tide roosts at Stockton Sandspit and Kooragang Dykes to their main foraging area in Fullerton Cove. The importance of this area as a foraging area for shorebirds has been overlooked in view of the overwhelming importance of Fullerton Cove as a food resource. However, recent observations indicate that the North Arm Sandflats are a vital part of the ecosystem for shorebirds in the estuary for both foraging and roosting. Fourteen Significant Species have been recorded.

*Significant Species:*

Bar-tailed Godwit (500), regularly observed
Whimbrel (6), regularly observed
Eastern Curlew (9), regularly observed
Terek Sandpiper (12), regularly observed
Grey-tailed Tattler (14), often observed
Great Knot, occasionally observed
Red Knot (1), occasionally observed
Red-necked Stint (20), often observed
Curlew Sandpiper (50), often observed
Pied Oystercatcher (2), often observed
Pacific Golden Plover (300), regularly observed
Caspian Tern (3), often observed
Crested Tern (5), regularly observed
Little Tern (3), often observed

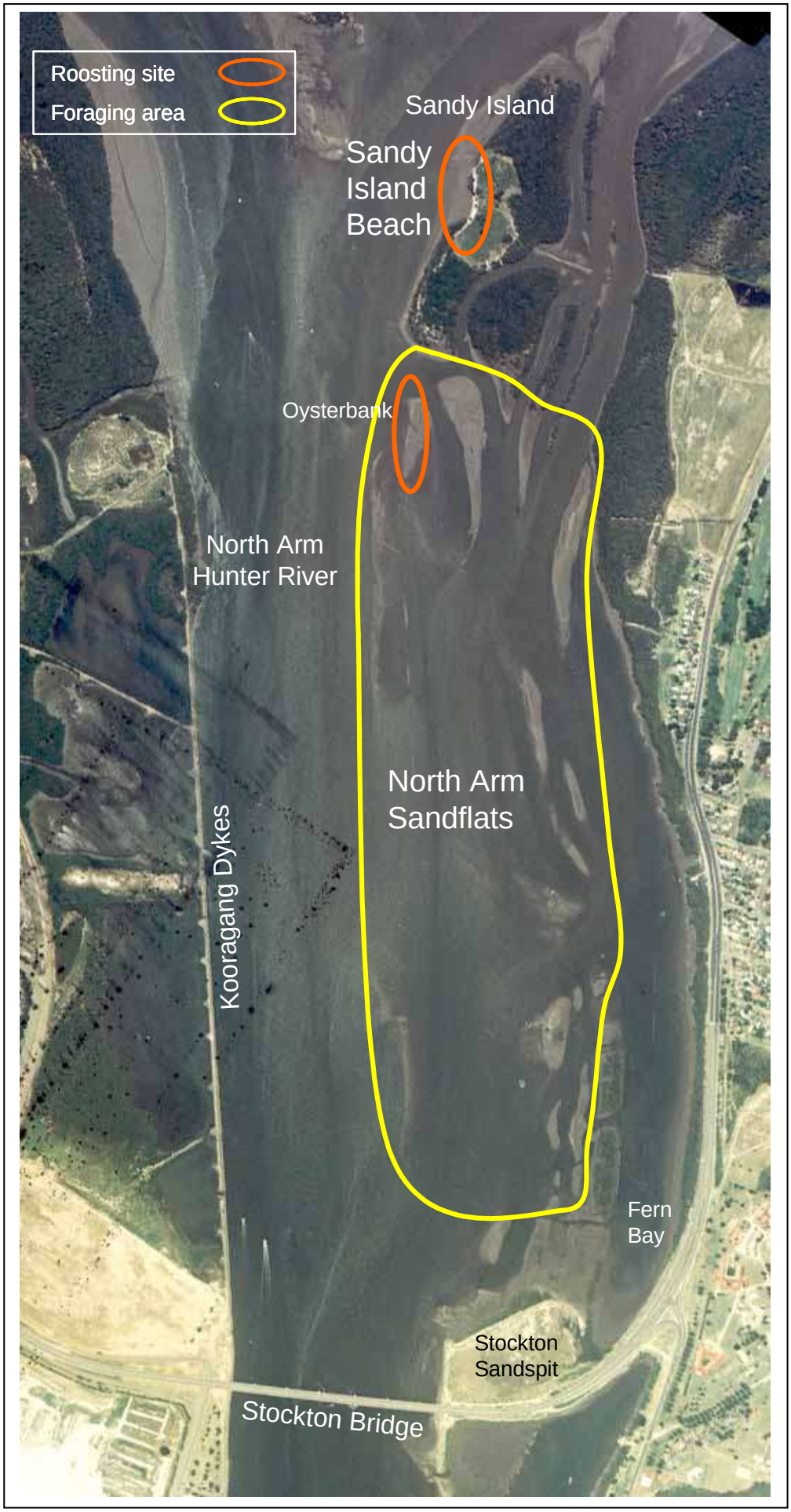



**Figure 2.2.6.** North Arm Sandflats and Sandy Island Beach.

### 2.2.7 Sandy Island Beach

A sandy beach on the western side of Sandy Island was an important shorebird high-tide roost site during the 1970s (**Figure 2.2.6**). However, subsequent growth of mangroves in front of the beach led to the beach being abandoned by shorebirds. Recent rehabilitation work to remove the mangroves has not encouraged shorebirds back to the area. The beach is not regularly monitored. There have been only two Significant Species observed using the beach since restoration.

*Significant Species:*

Common Greenshank (12), one record
Pied Oystercatcher (3), one record

### 2.2.8 Fullerton Cove

Fullerton Cove is a large circular body of shallow water with peripheral and central mudflats that expose at low tide (**Figure 2.2.8**). Today it is the most important foraging area for the majority of migratory and non-migratory shorebirds in the Hunter Estuary. However, anecdotal information indicates that the cove was formerly considerably deeper than today, allowing fishing boats to navigate freely across the whole area. Early maps (pre-1900) confirm this by showing that the majority of mudflats existed downstream of Sandy Island to where the North and South Arms rejoin, but no mudflats were shown to exist in the cove. This downstream area must have been the main foraging area for shorebirds at that time, *not* the cove. However, the 1955 Maitland Flood deposited a large amount of silt around the margins and central parts of the cove, restricting fishing boats to the deeper channels. Because most of the mudflats downstream of Stockton Bridge have now been destroyed by reclamation for industrial land the siltation of Fullerton Cove has been the saviour for shorebirds in the estuary by effectively providing compensatory foraging habitat.

Access to the cove at low tide is very difficult owing to the shallow water, consequently the area has not been regularly surveyed. Therefore, the following comments are qualitative rather than quantitative. Fullerton Cove provides a foraging area for most of the migratory shorebirds that inhabit the estuary, apart from those few species that prefer freshwater wetlands. The majority of birds consist of Bar-tailed Godwit, Black-tailed Godwit, Whimbrel, Eastern Curlew, Great Knot, Red Knot, Curlew Sandpiper, Common Greenshank, Marsh Sandpiper, Pacific Golden Plover and Double-banded Plover. Non-migratory shorebirds using the cove include thousands of Red-necked Avocet (up to 7,000 can be present in the estuary), Black-winged Stilt, Masked Lapwing and Great Egret. A mixed flock of 1,325 Chestnut and Grey Teal has been observed foraging in the northwest corner of Fullerton Cove (A. Richardson pers. comm.).

*Significant Species:* Exact numbers are not known, but would be at least 25 to 30 species, mostly consisting of shorebirds.

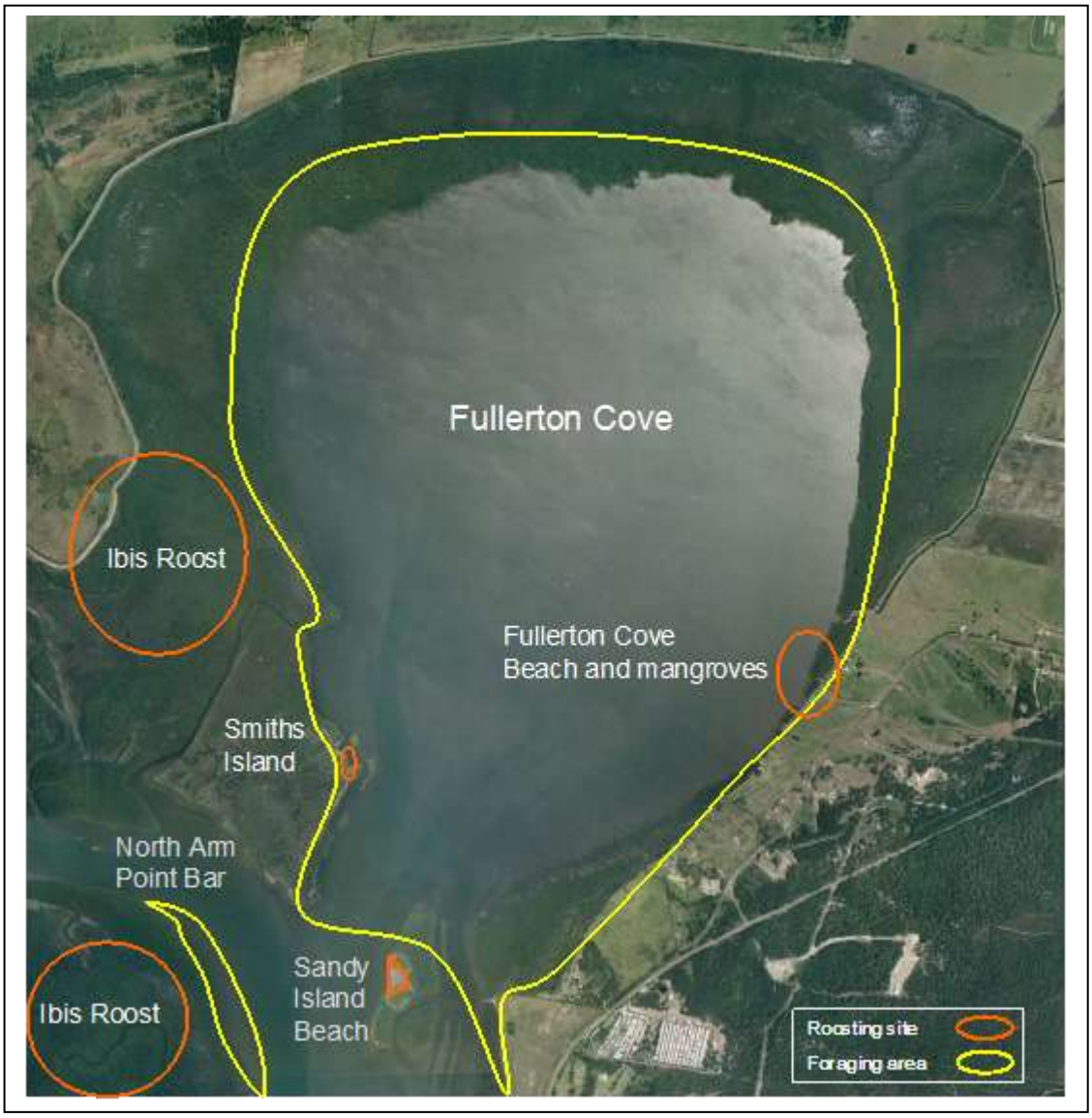



**Figure 2.2.8.** Fullerton Cove, Fullerton Cove Beach, Sandy Island Beach, North Arm Point Bar and Smiths Island.

### 2.2.9 Fullerton Cove Beach

Fullerton Cove is almost completely surrounded by a wide fringe of mangroves except for a sandy beach on the eastern shore (**Figure 2.2.8**). Because of its proximity to the main foraging area in the estuary the beach has been used as a high-tide roost by hundreds, and sometimes thousands, of shorebirds. A large number of Whimbrel usually roost in the surrounding mangroves. Unfortunately the beach has continued to diminish in size because of disappearing sand and the encroachment of mangroves. As a result fewer birds have been recorded roosting there in recent years. Birds such as Bar-tailed Godwit, Marsh Sandpiper, Red Knot and Curlew Sandpiper, have not roosted there since 2003. This important roost site is in urgent need of rehabilitation. Sixteen Significant Species have been recorded.

*Significant Species:*

Great Egret (3), often recorded
Australian White Ibis (214), often recorded
White-bellied Sea-Eagle (4), occasionally recorded
Black-tailed Godwit (1), one record in summer
Bar-tailed Godwit (20), occasionally recorded in summer
Whimbrel (185), regularly recorded
Eastern Curlew (2), occasionally recorded in summer
Marsh Sandpiper (80), moderately often recorded in summer
Common Greenshank (100), often recorded in summer
Terek Sandpiper (1), one record
Great Knot (2), rarely recorded
Red Knot (180), occasionally recorded in summer
Curlew Sandpiper (50), occasionally recorded in summer
Red-necked Avocet (2,150), frequently recorded
Caspian Tern (1), one record
Crested Tern (2), occasionally recorded

### 2.2.10 Smiths Island

During the 1970s migratory shorebirds roosted on the sandy beaches of Smiths Island. (**Figure 2.2.8**) The roost was abandoned when mangroves overran the beaches. Rehabilitation by removing mangroves in selected areas of the shoreline has, so far, encouraged only Whimbrel to roost. However, these areas are not monitored regularly. One Significant Species has been recorded.

*Significant Species:*

Whimbrel

### 2.2.11 North Arm Point Bar

No regular observations have been carried out on this muddy point bar where the North Arm of the Hunter River takes an almost right-angled bend to the west (**Figure 2.2.8**). However, a few Eastern Curlews and Bar-tailed Godwits have been observed to forage there. It is reasonable to expect that other species of shorebird, such as Whimbrel, could also use the mudflat; however, it does not appear to be a heavily used foraging area. Two Significant Species have been recorded.

*Significant Species:*

Bar-tailed Godwit
Eastern Curlew

## 2.2.12 Tomago Wetlands

Until the 1970s, saltmarsh ponds at Tomago Wetlands were the primary nocturnal roost for most of the shorebirds in the Hunter Estuary (**Figure 2.2.12**). The eastern part of the Tomago Wetlands lies within the Kooragang Nature Reserve. Construction of a ring-drain and floodgates around Fullerton Cove drained the wetland converting it to rough pasture. Shorebirds transferred to a smaller system of saltmarsh ponds now known as Windeyers Reach Nocturnal Roost (**Figure 2.2.14**). Planned re-opening of the floodgates will restore tidal inundation to the Tomago Wetlands. HBOC is now monitoring the bird population to determine the effects of rehabilitation. However, prior to this regular bird counts have not been carried out. Only five Significant Species have been recorded here in recent years.

*Significant Species:*

Magpie Goose
Australasian Bittern (1)
Black-necked Stork (1)
White-bellied Sea-Eagle (5)
Grass Owl

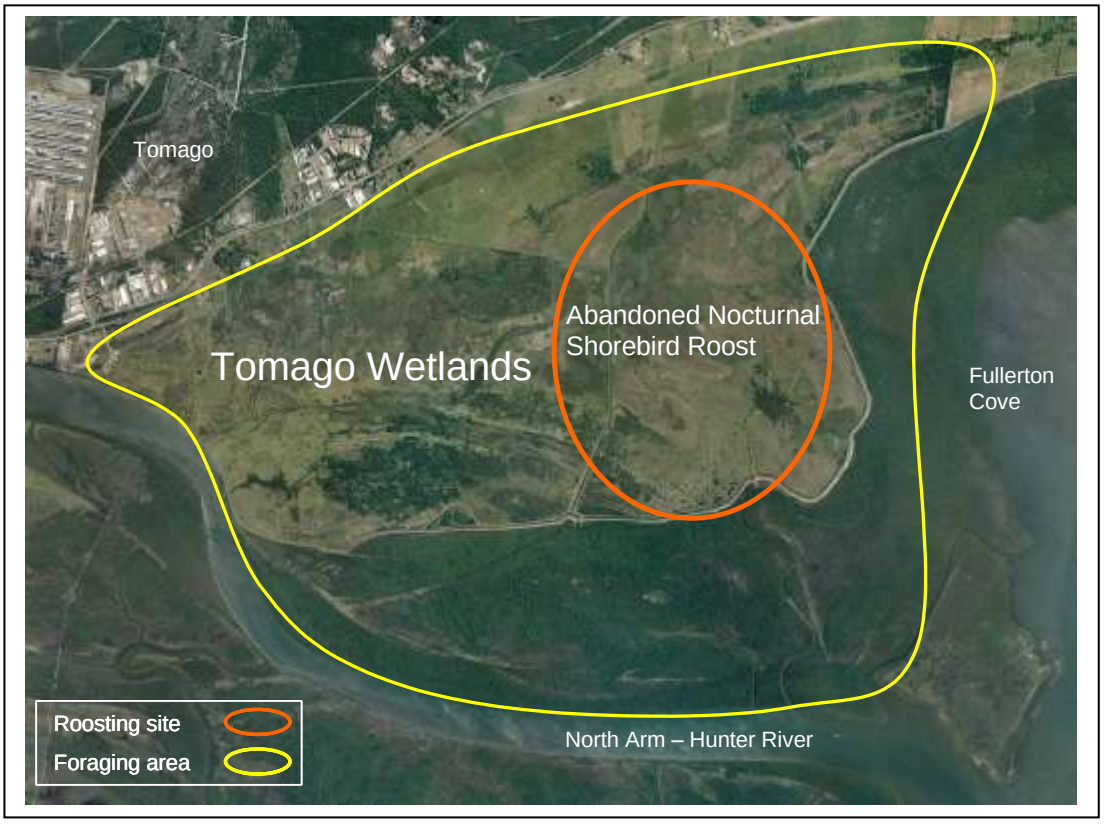



**Figure 2.2.12.** Tomago Wetlands.

### 2.2.13 Windeyers Reach Nocturnal Roost

After the demise of the major Tomago Wetlands nocturnal roost when the area was drained during the 1970s, migratory shorebirds began roosting at Windeyers Reach Nocturnal Roost (**Figure 2.2.14**). The roost consists of two saltmarsh ponds separated by a small tidal creek. Shorebirds do not use the two main diurnal roosts at Stockton Sandspit and the Kooragang Dykes during the night as they are prone to nocturnal predators such as foxes. Instead the birds fly upstream along the North Arm and roost in shallow saltmarsh ponds at Windeyers Reach. It is thought that most of the larger migratory shorebird species and an unknown number of the smaller species roost there.

The ponds are rapidly succumbing to mangrove invasion and are in urgent need of intervention to allow the area to continue to function as a nocturnal roost.

*Significant Species:* Exact numbers are not known, but a large number of migratory and non-migratory shorebirds use the roost. The following species have been recorded (J. Spencer in prep.):

Chestnut Teal
Black-tailed Godwit
Bar-tailed Godwit
Whimbrel
Eastern Curlew
Common Greenshank
Sharp-tailed Sandpiper (11 observed during daytime)
Red-necked Avocet

### 2.2.14 Mosquito Creek

Mosquito Creek is the largest tidal creek in the estuary (**Figure 2.2.14**). It used to flow right across Kooragang Island, joining the North and South Arms of the Hunter River, but has been blocked off by the industrial rail line and Port Waratah Coal Services coal loader. The only *Significant Species* observed is a single Common Sandpiper. Herons and egrets are probably the most common birds using the creek.

*Significant Species:*

Common Sandpiper (1), one observation in summer

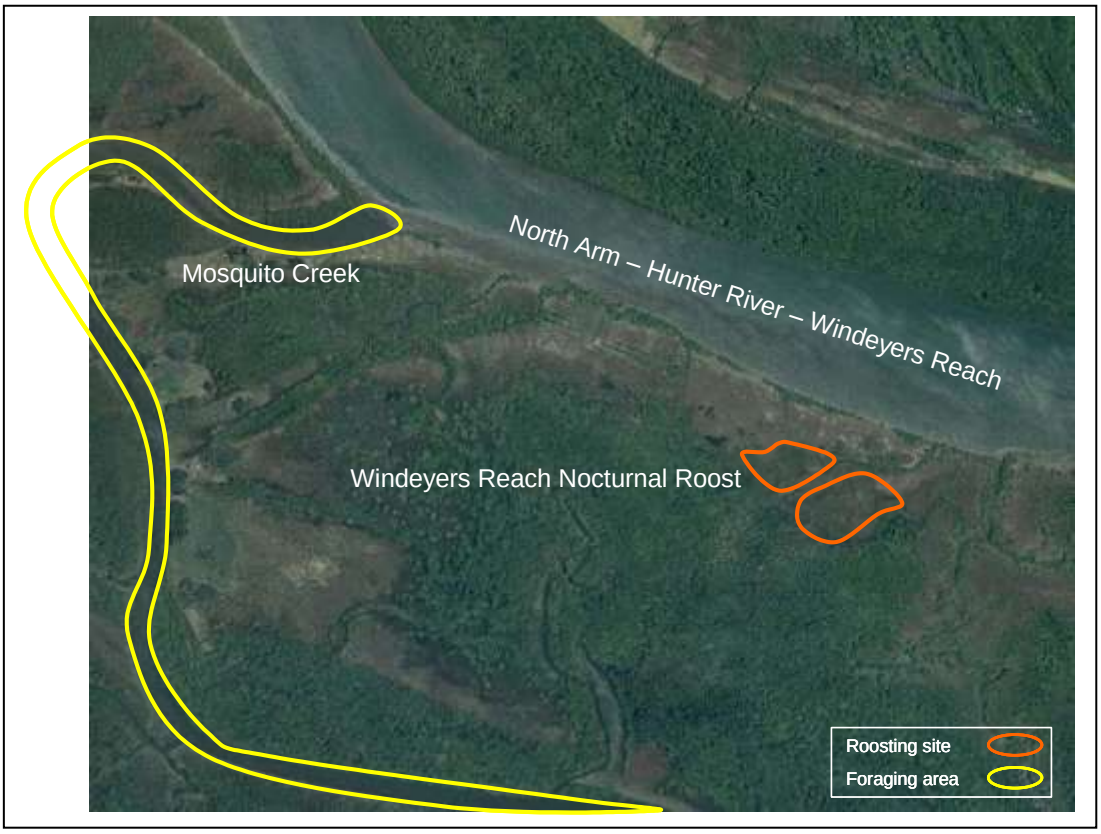



**Figure 2.2.14.** Windeyers Reach Nocturnal Roost and Mosquito Creek.

## 2.2.15 Tomago Ibis Roost

The Tomago Ibis Roost has been recognized only recently and was monitored during 2001/02 (**Figure 2.2.15a**). A maximum of 877 Australian White Ibis and 194 Straw-necked Ibis used the roost during May 2001 (**Figure 2.2.15b**). As the roost has not been monitored since March 2002 trends in numbers of ibis or other birds using the site are not known.

*Significant Species:*

Australian White Ibis (877)
Straw-necked Ibis (194)

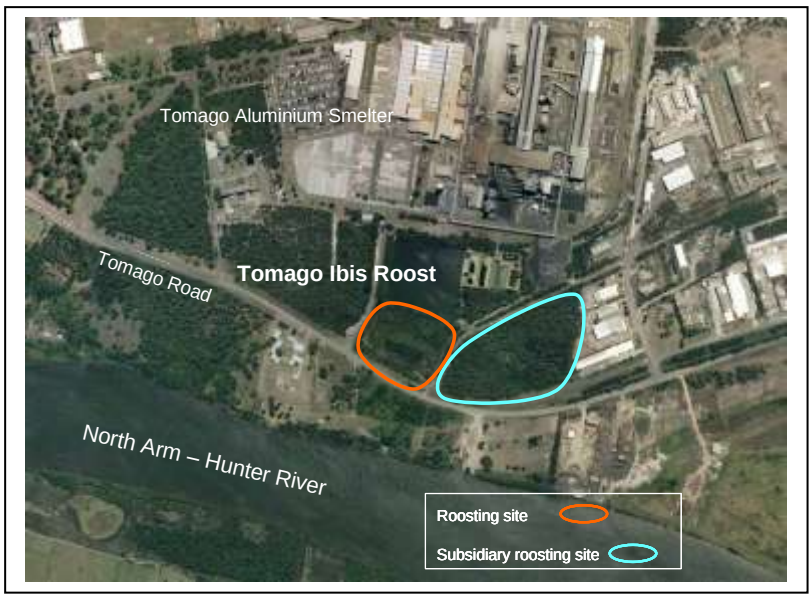



**Figure 2.2.15a.** Tomago Ibis Roost. Main roost in orange, subsidiary roost in aqua.

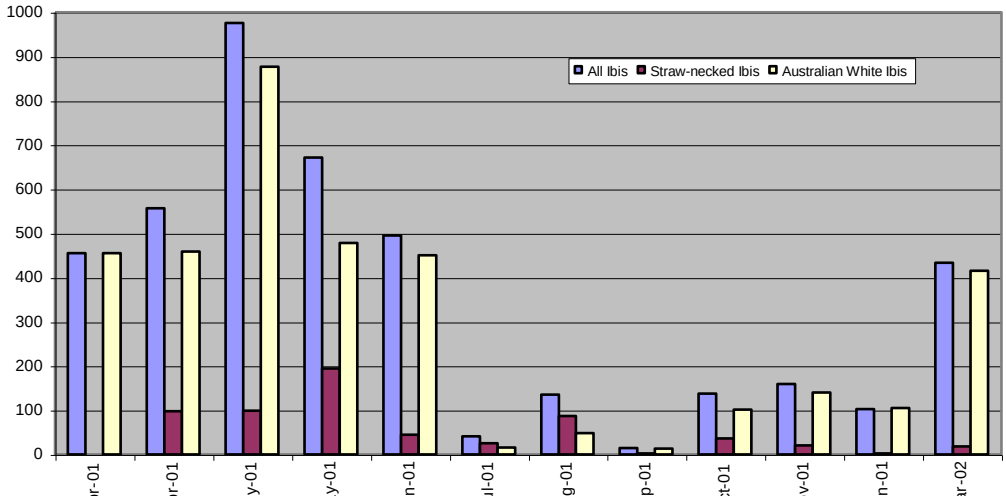



**Figure 2.2.15b.** Australian White Ibis and Straw-necked Ibis roosting at Tomago Ibis Roost, 2000 to 2001 (Greg Little and Max Maddock).

## 2.3 KOORAGANG ISLAND INDUSTRIAL AREA WETLANDS

The industrial-zoned area enclosed by the industrial railway on Kooragang Island, used to be an important area for shorebirds. Substantial removal of habitat for industrial development has displaced shorebirds to other parts of the estuary. However, a few remnant and heavily modified ponds, such as Deep Pond and Blue-billed Duck Pond, remain as biodiversity hotspots.

### 2.3.1 Big Pond

Big Pond is located on state-owned land within the industrial-zoned area of Kooragang Island and is destined for future industrial development as a coal loader (**Figure 2.3.1**). Big Pond was formerly an extensive shallow brackish wetland, connected by a floodgate to the South Arm of the Hunter River. A small weir helped to maintain water levels on Big Pond. However, following the collapse of the weir, changes to the local hydrology due to industrial development combined with low rainfall caused the wetland to dry up. Currently, vegetation covers most of Big Pond, which is now reduced to two small drying ponds in a sea of coarse grass and reeds. The wide shallow expanse of fresh to brackish water, which characterised Big Pond prior to January 2000, was ideal foraging habitat for small migratory waders such as Red-necked Stint, Sharp-tailed Sandpiper, Curlew Sandpiper, and non-migratory waders such as Red-necked Avocet, Black-winged Stilt and Black-fronted Dotterel. Big Pond ceased to be important for shorebirds after December 1999. The tall grasses and reeds in Big Pond are now ideal habitat for bitterns and an Australasian Bittern was, in fact, recorded in 2006. Another notable discovery in Big Pond was the first recorded breeding of Swamp Harriers in the Hunter Estuary. A nest with 3 eggs and a newly hatched nestling was found in fringing reeds. However, the breeding event failed, perhaps due to predation. Eighteen Significant Species have been recorded in the past.

*Significant Species (mostly before December 1999):*

Chestnut Teal (100)
Great Egret (1)
Australasian Bittern (1), during the 1980s and 2006
Australian White Ibis (11)
White-bellied Sea-Eagle (1)
Bar-tailed Godwit (17)
Marsh Sandpiper (100)
Common Greenshank (30)
Red Knot (4), occasionally recorded
Red-necked Stint (67)
Pectoral Sandpiper (7), rarely recorded
Sharp-tailed Sandpiper (300)
Curlew Sandpiper (200)
Ruff (1)
Lesser Sand Plover (6-20), rarely recorded
Red-necked Avocet (410)
Pacific Golden Plover (24)
Caspian Tern (7)

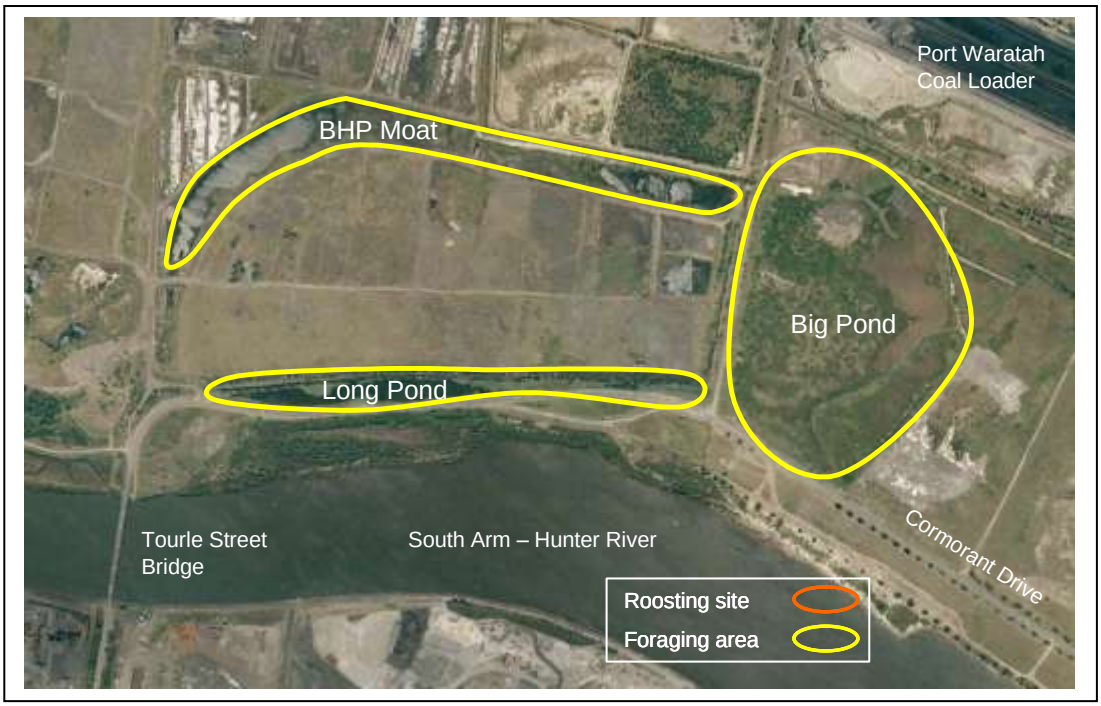



**Figure 2.3.1.** Big Pond, Long Pond and BHP Moat.

### 2.3.2 Long Pond

Long Pond is an elongate pond alongside Cormorant Drive (**Figure 2.3.1**) It often supports Pacific Black Duck, Chestnut Teal, Grey Teal, Purple Swamphen and nesting Black Swan. Three Significant Species have been recorded.

*Significant Species:*

Chestnut Teal (54), often recorded
Great Egret (2), moderately often recorded
Sharp-tailed Sandpiper (260), occasionally recorded

### 2.3.3 BHP Moat

This elongate remnant wetland supports a variety of waterfowl such as Black Swan, Musk Duck, Purple Swamphen, Australasian Grebe, Baillon's Crake and Significant Species such as Australasian Bittern and Sharp-tailed Sandpiper (**Figure 2.3.1**). White-breasted Woodswallows nest in hollows in the dead mangroves. Seven Significant Species have been recorded.

*Significant Species:*

Chestnut Teal (30), moderately often recorded
Great Egret (3), occasionally recorded
Australasian Bittern (1), one record
Australian White Ibis (14), occasionally recorded
White-bellied Sea-Eagle (1), occasionally recorded
Common Greenshank (2), occasionally recorded in summer
Sharp-tailed Sandpiper (40), occasionally recorded in summer

### 2.3.4 Deep Pond

Deep Pond is a highly significant foraging and roosting site for a multitude of shorebirds and waterfowl. It is located on land managed by the Regional Land Management Corporation (RLMC) and is zoned for industrial development (**Figure 2.3.4**). Regular surveys of Deep Pond did not commence until September 2000. Surveys were initially undertaken from the western side that provided incomplete and distant views over the industrial railway line. Since June 2005 the site has been surveyed from the eastern and southern sides affording unobstructed views of the wetland. There has been a trend of increasing numbers of shorebirds using Deep Pond, caused mainly by Red-necked Avocets that have been increasing in numbers in the estuary over this time (**Figures 3.7.7a and d**). Migratory shorebirds using Deep Pond include small to medium-sized waders such as Marsh Sandpiper, Common Greenshank, Sharp-tailed Sandpiper, Curlew Sandpiper, Red-necked Stint, Double-banded Plover and Latham's Snipe. Rarer shorebirds include Black-tailed Godwit, Pectoral Sandpiper and Ruff. Non-migratory shorebirds such as Red-necked Avocet, Black-winged Stilt, Masked Lapwing and Black-fronted Dotterel are commonly present. Deep Pond has a shallow southern area that, as it dries out, is ideal habitat for shorebirds. The northern part is deep enough to attract the deep diving ducks such as Hardhead, Musk Duck and Blue-billed Duck of which the last is listed as vulnerable under the Threatened Species Conservation Act 1995. The vulnerable Freckled Duck and the rare Northern Shoveler have also been seen in Deep Pond.

During the summer of 2005/2006 Deep Pond often had a greater diversity and abundance of bird species than the whole of Ash Island. Its importance, therefore, cannot be emphasised enough. Although zoned for industrial development this wildlife refuge should be preserved and integrated with the industrial area as a conservation show-piece.

White-bellied Sea-Eagle, Whistling Kite, Swamp Harrier, Spotted Harrier, Peregrine Falcon, Australian Hobby, Brown Falcon, Nankeen Kestrel, Black-shouldered Kite and Brown Goshawk are often present. The diversity of raptors (top-end predators) emphasises the ecological importance of the wetland and surrounding grassland. Twenty-four Significant Species have been recorded.

*Significant Species:*

Blue-billed Duck (4), occasionally recorded
Freckled Duck (6), occasionally recorded
Northern Shoveler (1), rare record
Chestnut Teal (1,010), regularly recorded
Great Egret (7), often recorded
Cattle Egret (15), occasionally recorded
Australian White Ibis (26), occasionally recorded
Straw-necked Ibis (8), occasionally recorded
Osprey (1), one record
White-bellied Sea-Eagle (10), moderately often recorded
Latham's Snipe (1), one record in summer
Black-tailed Godwit (3), occasionally recorded in summer
Bar-tailed Godwit (1), one record in summer
Marsh Sandpiper (270), often recorded in summer
Common Greenshank (21), moderately often recorded in summer
Red-necked Stint (122), occasionally recorded
Pectoral Sandpiper (1)
Sharp-tailed Sandpiper (600), often recorded in summer
Curlew Sandpiper (450), moderately often recorded in summer
Ruff (1), one record in summer

Red-necked Avocet (2,000), often recorded
Double-banded Plover (2), occasionally recorded
Caspian Tern (4), occasionally recorded
Yellow Wagtail (1), occasionally on railway embankment


**Figure 2.3.4.** Deep Pond and Blue-billed Duck Pond.

### 2.3.5 Blue-billed Duck Pond

This small pond has hydraulic connection with Deep Pond and has gained its name from the many observations of the "Vulnerable" Blue-billed Duck (2) (**Figure 2.3.4**). Magpie Geese (25), also listed as "Vulnerable", use the pond. Pacific Black Duck, Australasian Shoveler, Australasian and Hoary-headed Grebe, Eurasian Coot and breeding Black Swan are usual inhabitants. Clamorous Reed-Warbler and Little Grassbird frequent the reed margins while Golden-headed Cisticola use the surrounding coarse grassy fields. Two Significant Species have been recorded.

*Significant Species:*

Magpie Goose (25), one observation
Blue-billed Duck (2), occasionally observed

## 2.4 ASH ISLAND

### 2.4.1 Ash Island total

Ash Island (formerly the name of a separate island, now retained to refer to the western part of Kooragang Island) is one of the most important areas in the Hunter Estuary for the small to medium-sized shorebirds (**Figure 2.4.1**). It has extensive saltmarsh, mangroves and shallow, tidal ponds that attract a huge variety of birdlife. The main ponds are Swan Pond, Wader Pond and Milhams Pond. Fish Fry Flats used to be important habitat, but it has been overgrown by mangroves during the last 10 years. Mangroves have been removed from Swan, Wader and Milhams Ponds before the same could happen to these vital wetlands. Most of the Significant Species such as shorebirds, terns and raptors discussed in this report have been recorded on Ash Island (see Appendices). At times the ponds support many hundreds of birds. The area is especially important for the smaller migratory waders such as Sharp-tailed Sandpiper, Curlew Sandpiper, Red-necked Stint, Marsh Sandpiper, and Common Greenshank. It is a favourite foraging area for Black-winged Stilt and often for Red-necked Avocet and at times supports hundreds of Chestnut Teal and Grey Teal and a variety of other waterfowl. Brown Quail, Spotted Crake, Spotless Crake, Buff-banded Rail and Australasian Bittern have all been recorded. The ponds are also used as nocturnal roosts by shorebirds. The area is celebrated for the regular summer appearance of Yellow Wagtails and many other rare shorebirds. Thirty-seven Significant Species have been recorded. More detailed discussion of individual wetlands on Ash Island follows in **Sections 2.4.2 to 2.4.10**.

*Significant Species:*

Magpie Goose
Freckled Duck (3)
Chestnut Teal (1500+), often recorded
Freckled Duck (3), rarely recorded
Great Egret (27), frequently recorded
Cattle Egret (100+), regularly recorded
Black Bittern (1), rarely recorded
Australasian Bittern (1), occasionally recorded
Glossy Ibis (100-150), occasionally recorded
Australian White Ibis (1,000+), regularly recorded
Straw-necked Ibis (150), moderately often recorded
Black-necked Stork (4), rarely recorded
White-bellied Sea-Eagle (5), occasionally recorded
Black-tailed Godwit (8), occasionally recorded
Bar-tailed Godwit (1), one diurnal record, (143) roosting nocturnally during winter
Little Curlew (3), recorded once
Whimbrel (3), occasionally recorded
Eastern Curlew (153), moderately often recorded
Marsh Sandpiper (289), often recorded in summer
Common Greenshank (129), often recorded in summer
Common Sandpiper (5), one record
Red Knot (1,427), occasionally recorded
Red-necked Stint (71), moderately often recorded in summer
Long-toed Stint (1), rarely recorded
Sharp-tailed Sandpiper (1,172), often recorded in summer
Curlew Sandpiper (69), moderately often recorded in summer
Broad-billed Sandpiper (2), rarely recorded
Ruff (1), rarely recorded
Buff-breasted Sandpiper (1), rarely recorded
Painted Snipe (2)

Red-necked Avocet (718), moderately often recorded
Pacific Golden Plover (77), occasionally recorded in summer
Grey Plover (1), rarely recorded
Double-banded Plover (20), occasionally recorded
Caspian Tern (6-10), moderately often recorded
Grass Owl (3), occasionally recorded
Yellow Wagtail (7), occasionally recorded in summer


**Figure 2.4.1.** Significant Ash Island bird localities. See following discussion for more detailed figures for each location.

### 2.4.2 Swan Pond

Swan Pond is the most important saltmarsh pond in Area E (**Figure 2.4.2**). Depending on the season and water levels large numbers of many species may be present, while at other times only a few species of the usual waterfowl occur. Twenty-eight Significant Species have been recorded on Swan Pond.

*Significant Species:*

Chestnut Teal (1,128), frequently recorded
Great Egret (15), often recorded
Cattle Egret (2), rarely recorded
Australasian Bittern (1), rarely recorded
Australian White Ibis (18), often recorded
Straw-necked Ibis (12), occasionally recorded
Black-necked Stork (1), rarely recorded
White-bellied Sea-Eagle (4), moderately often observed
Black-tailed Godwit (3), occasionally recorded in summer
Bar-tailed Godwit (143, combined with Wader Pond), nocturnally roosting during winter
Little Curlew (3), rarely recorded
Whimbrel (3), occasionally recorded
Eastern Curlew (20), moderately often recorded
Marsh Sandpiper (152), often recorded in summer
Common Greenshank (78), often recorded in summer
Common Sandpiper (1), rarely recorded in summer
Ruddy Turnstone (1), rarely recorded
Red Knot (67), occasionally recorded
Red-necked Stint (260), moderately often recorded in summer
Sharp-tailed Sandpiper (1,482), often recorded in summer
Curlew Sandpiper (45), moderately often recorded in summer
Buff-breasted Sandpiper (1), rarely recorded
Ruff (1)
Pacific Golden Plover (14), occasionally recorded in summer
Double-banded Plover (6), rarely recorded
Red-necked Avocet (243), moderately often recorded
Caspian Tern (4), occasionally recorded
Yellow Wagtail (7), occasionally recorded in summer


**Figure 2.4.2.** Area E contains some of the most significant areas for shorebirds on Ash Island (Swan Pond, Wader Pond and Fish Fry Flats).

### 2.4.3 Wader Pond

Wader Pond and a large area of saltmarsh support a variety of shorebirds and a few other waterbirds (**Figure 2.4.2**). Wader Pond was separated from Swan Pond by the construction of an electricity line access road. The continuing threat of encroaching mangroves is being counteracted by a mangrove-removal program. Twenty-one Significant Species have been recorded at Wader Pond.

*Significant Species:*

Chestnut Teal (250), often recorded
Great Egret (4), moderately often recorded
Australasian Bittern (1), rarely recorded
Australian White Ibis (80) often recorded
Straw-necked Ibis (76), occasionally recorded
Black-necked Stork (1), rarely recorded
White-bellied Sea-Eagle (5), moderately often observed
Black-tailed Godwit (1), occasionally recorded
Bar-tailed Godwit (1, diurnal), (143, combined with Swan Pond, nocturnally roosting during winter)
Eastern Curlew (152), often recorded
Marsh Sandpiper (142), often recorded in summer
Common Greenshank (75), often recorded in summer
Red-necked Stint (100), often recorded in summer
Long-toed Stint (1), rarely recorded
Sharp-tailed Sandpiper (696), often recorded in summer
Curlew Sandpiper (25), moderately often recorded in summer
Buff-breasted Sandpiper (1), rarely recorded
Broad-billed Sandpiper (1), rarely recorded
Red-necked Avocet (178), moderately often recorded
Pacific Golden Plover (77), moderately often recorded in summer
Caspian Tern (2), occasionally recorded

### 2.4.4 Fish Fry Flats

Fish Fry Flats was an extensive area of saltmarsh, mudflats and open water before mangroves over-ran the area (**Figure 2.4.2**). Records refer to the period 1994 to 2003 only. Thirteen Significant Species have been recorded.

*Significant Species:*

Chestnut Teal (53), moderately often recorded
Great Egret (5), occasionally recorded
Australian White Ibis (116), often recorded
Straw-necked Ibis (71), moderately often recorded
Black-tailed Godwit
Eastern Curlew (22), moderately often recorded
Marsh Sandpiper (2), occasionally recorded
Common Greenshank (2), occasionally recorded
Red-necked Stint
Sharp-tailed Sandpiper (30), occasionally recorded
Curlew Sandpiper
Red-necked Avocet (1), rarely recorded
Caspian Tern (1), rarely recorded

### 2.4.5 Sharpies Flat

Sharpies Flat is an area of ephemeral saltmarsh ponds. When the ponds are filled by spring tides or rain, they support some of the smaller migratory shorebirds, as well as teal, egret and ibis (**Figure 2.4.6**). Nine Significant Species have been recorded.

*Significant Species:*

Chestnut Teal (8), occasionally recorded
Great Egret (1), occasionally recorded
Australian White Ibis (25), occasionally recorded
White-bellied Sea-Eagle (1), occasionally recorded
Marsh Sandpiper (3), occasionally recorded
Common Greenshank (19), moderately often recorded
Sharp-tailed Sandpiper (104), often recorded
Curlew Sandpiper (1), occasionally recorded
Pacific Golden Plover (12), occasionally recorded

## 2.4.6 Teal Waters

Teal Waters is an ephemeral saltmarsh pond that sometimes hosts large numbers of Chestnut Teal and some of the smaller shorebirds (**Figure 2.4.6**). At least eight Significant Species have been observed. It is often not possible to separate records specific to this location from general Ash Island records.

*Significant Species:*

Chestnut Teal (300-400), often observed
Northern Shoveler (1), rare record
Great Egret
Marsh Sandpiper
Common Greenshank (5)
Red-necked Stint
Sharp-tailed Sandpiper (75)
Pacific Golden Plover

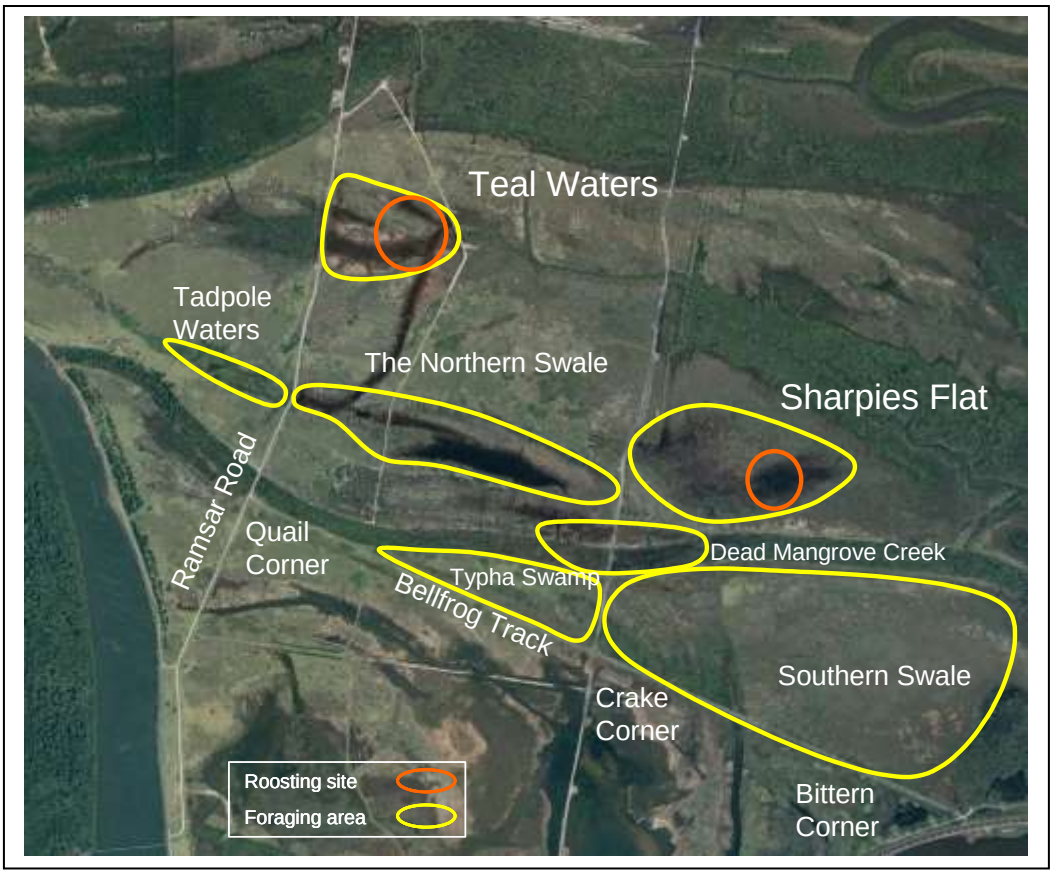



**Figure 2.4.6.** Teal Waters and Sharpies Flat.

### 2.4.7 Phoenix Flats

Phoenix Flats is an area of newly created saltmarsh adjacent to Milhams Pond (**Figure 2.4.8**). The increasing number of shorebird observations attests to the successful creation of new habitat. Thirteen Significant Species have been recorded.

*Significant Species:*

Chestnut Teal (3), occasionally recorded
Great Egret (8), occasionally recorded
Cattle Egret (5), occasionally recorded
Australian White Ibis (31), moderately often recorded
Straw-necked Ibis (8), moderately often recorded
Black-necked Stork (1), rarely observed
Eastern Curlew (4), occasionally recorded
Marsh Sandpiper
Common Greenshank (1), rarely recorded
Red-necked Stint (33), frequently recorded
Curlew Sandpiper (3), occasionally recorded
Pacific Golden Plover
Red-necked Avocet (1), rarely recorded

### 2.4.8 Milhams Pond

Milhams Pond is an abandoned former channel (billabong) of the Hunter River (**Figure 2.4.8**). It has recently undergone rehabilitation by the removal of young mangroves. At times it supports a diversity of waterbirds and, at times, large numbers of Red-necked Avocet, Sharp-tailed Sandpiper and Red Knot are present. Thirteen Significant Species have been recorded.

*Significant Species:*

Chestnut Teal (53), often recorded
Great Egret (2), often recorded
Australian White Ibis (13), often recorded
Black-necked Stork (2), rarely recorded
Latham's Snipe (2), rarely recorded
Bar-tailed Godwit (6), rarely recorded diurnally, (55 nocturnally roosting during winter)
Eastern Curlew (24), frequently recorded
Marsh Sandpiper (36), rarely recorded
Common Greenshank (13), occasionally recorded
Red Knot (1,669), occasionally recorded
Red-necked Stint
Sharp-tailed Sandpiper (450), occasionally recorded
Red-necked Avocet (198), occasionally recorded

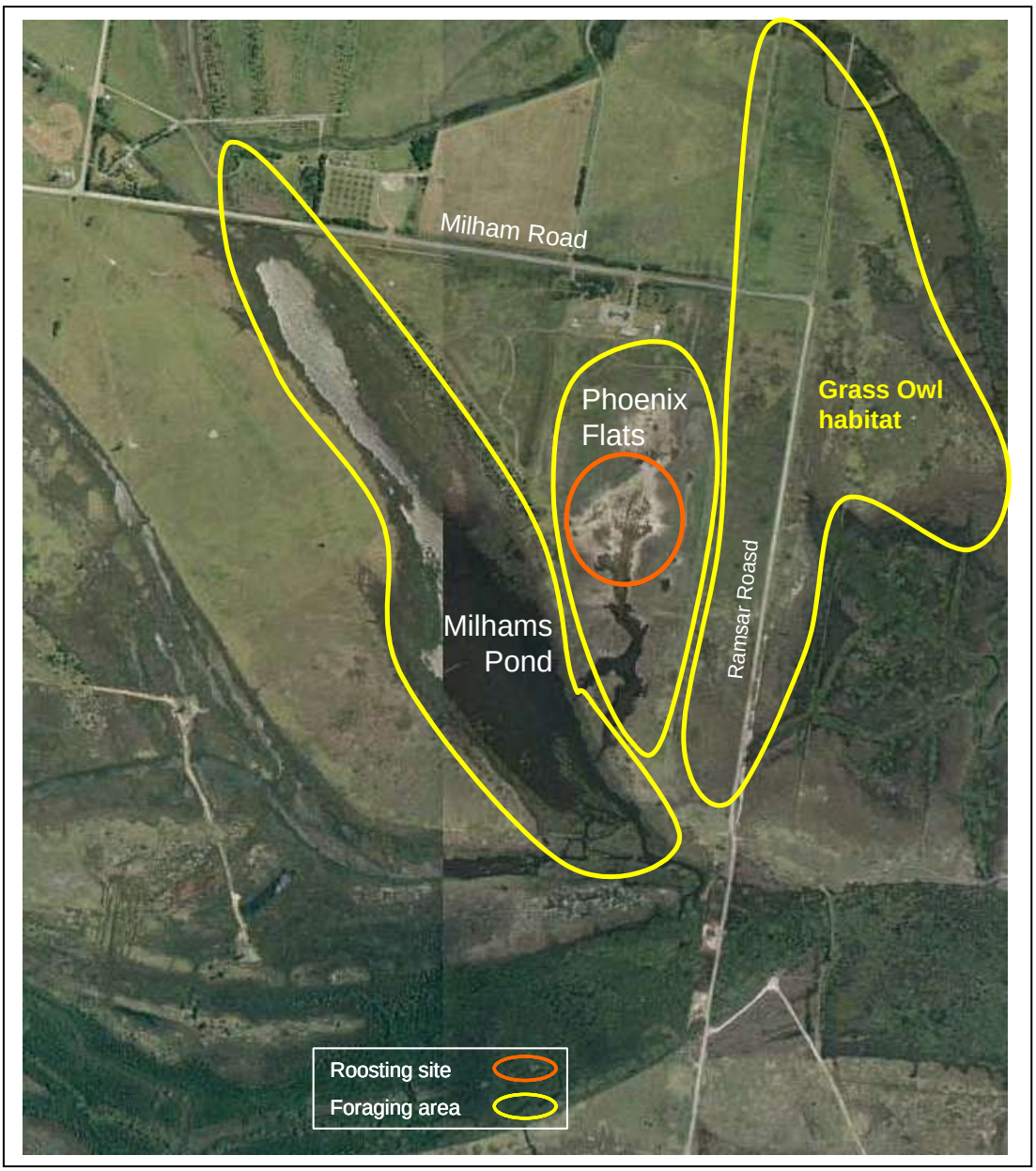



**Figure 2.4.8.** Milhams Pond and Phoenix Flats.

### 2.4.9 Melaleuca Swale and Water Ribbon Swale

Melaleuca Swale and Water Ribbon Swale, is an abandoned former channel (billabong) of the Hunter River, now separated by a road (**Figure 2.4.10**). Both are elongate, ephemeral, saltmarsh ponds. After rain the swales support a diversity of waterbirds and notably, at one time, the rare Painted Snipe. It is not possible to separate many records specific to this location from general Ash Island records. Ten Significant Species have been recorded and a number of crakes have been observed such as Baillon's Crake (8), Spotted Crake (1) and Spotless Crake (1).

*Significant Species:*

Chestnut Teal (70), occasionally observed
Great Egret, often observed
Cattle Egret (2), occasionally observed
Glossy Ibis (30), occasionally observed
Australian White Ibis, occasionally observed
Straw-necked Ibis, occasionally observed
Common Greenshank
Sharp-tailed Sandpiper (36)
Curlew Sandpiper
Painted Snipe (2), rarely recorded

### 2.4.10 Scotts Point and Hexham Island

Pacific Golden Plovers regularly roost on the bouldery shoreline and on a minute patch of saltmarsh at the extreme tip of Scotts Point, where the North and South Arms of the Hunter River diverge (**Figure 2.4.10**). At times, as many as 40 Masked Lapwings also roost in the area, often where there is a break in the shoreline mangroves on Hexham Island immediately opposite Scotts Point. Five Significant Species have been recorded.

*Significant Species:*

Australian White Ibis (33), occasionally recorded
Whimbrel (4), occasionally recorded
Common Greenshank (3), rarely recorded
Common Sandpiper (5), occasionally recorded
Pacific Golden Plover (54), frequently recorded

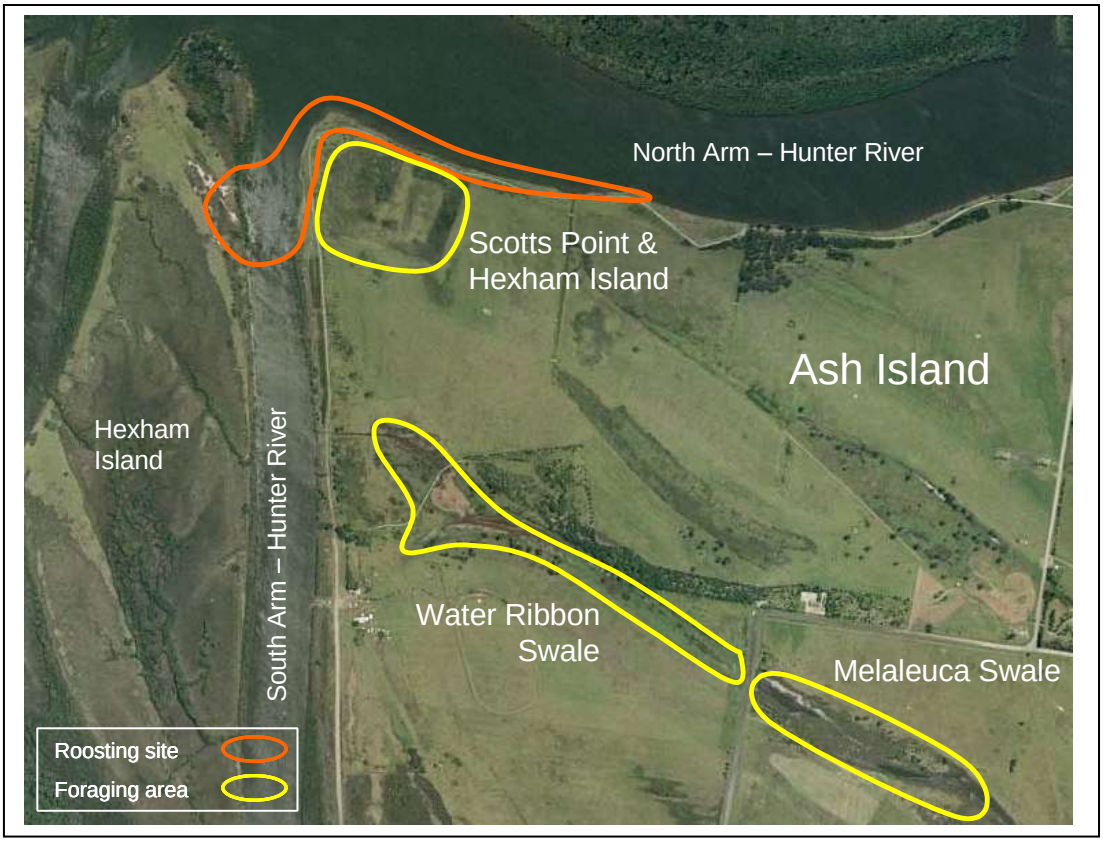



**Figure 2.4.10.** Melaleuca Swale, Water Ribbon Swale, Scotts Point and Hexham Island.

## 2.5 HEXHAM SWAMP AND ASSOCIATED WETLANDS

### 2.5.1 Hexham Swamp (including Hexham Swamp Nature Reserve)

Hexham Swamp, once a vast freshwater and saltwater wetland complex, has undergone drainage works and closure of tidal floodgates that have prevented tidal inundation (**Figure 2.5.1**). It has been, to a large extent, converted to pasture and extensive areas of reeds. The habitat is suitable for Australasian Bittern and Grass Owl and both have been recorded there. Peripheral areas still retain freshwater after periods of heavy rain and attract a variety of waterbirds such as herons, egrets, and ibis (including Glossy, Straw-necked and White Ibis). Black Swans nest there when conditions are suitable. Hundreds of Whiskered Terns are present after rains and the area is patrolled by a large variety of raptors. Plans to reopen the floodgates to reinstate tidal inundation should see a reduction in the area of reeds and regrowth of saltmarsh and mangroves that, in turn, should encourage a variety of waterbirds back to the area. Eight small to medium-sized migratory shorebirds have been recorded and, at times, very large numbers of Sharp-tailed Sandpipers (up to 1,800) have been observed. Twenty Significant Species have been recorded.

*Significant Species:*

Chestnut Teal, Br (600+), regularly recorded
Great Egret (28), frequently recorded
Cattle Egret, (81), frequently recorded
Australasian Bittern (6), probably breeding, rarely recorded
Glossy Ibis (75), moderately often recorded
Australian White Ibis, (165), frequently recorded
Straw-necked Ibis, (328+), frequently recorded
Black-necked Stork (1), rarely recorded
White-bellied Sea-Eagle, (4), regularly recorded
Latham's Snipe (2), occasionally recorded
Black-tailed Godwit (2), rarely recorded
Marsh Sandpiper (50), occasionally recorded
Common Greenshank (1-2)
Red-necked Stint (1-5), rarely recorded
Sharp-tailed Sandpiper (1800), moderately often recorded
Curlew Sandpiper (10), rarely recorded
Red-necked Avocet (4), occasionally recorded
Pacific Golden Plover (1), rarely recorded
Double-banded Plover (11), rarely recorded
Grass Owl (1), rarely recorded

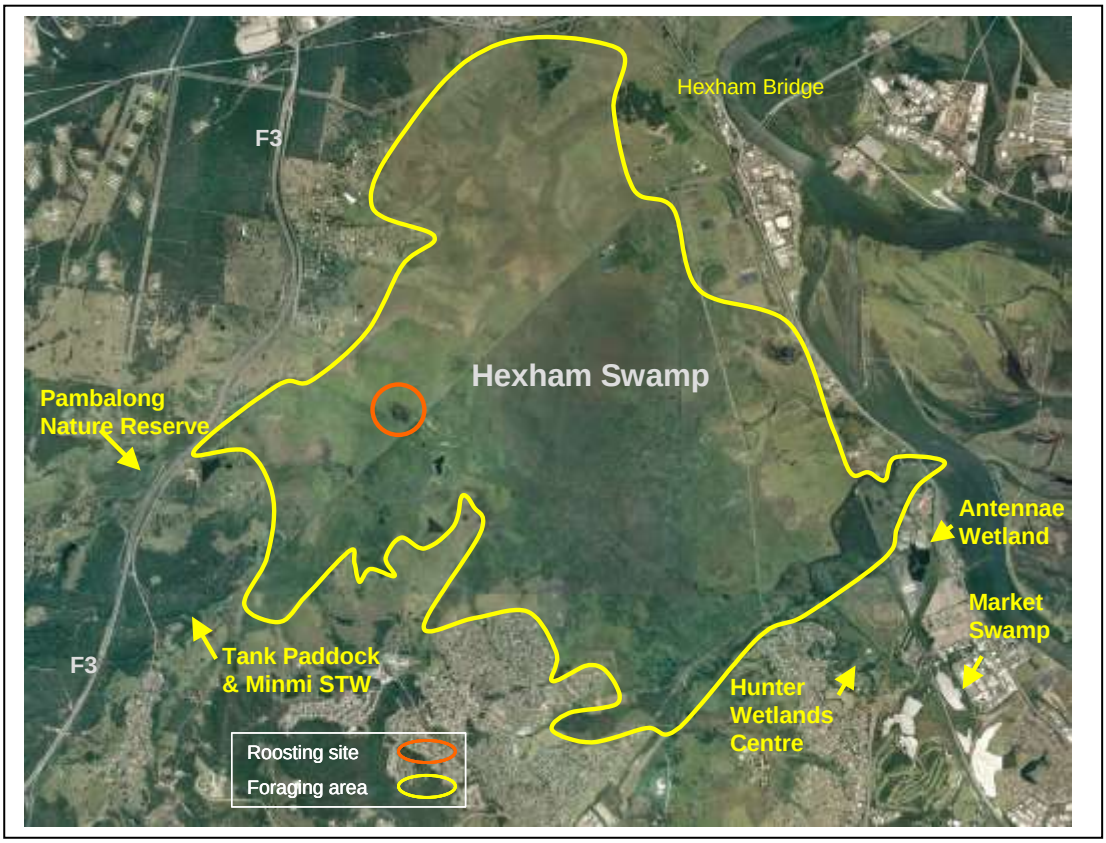



**Figure 2.5.1**. Hexham Swamp.

### 2.5.2 Pambalong Nature Reserve

The area now designated Pambalong Nature Reserve used to be the western extent of Hexham Swamp before it was cut off by construction of the F3 freeway (**Figure 2.5.2a**). It now forms a discrete complex of three main ponds, reed swamps and a paperbark swamp. Pambalong Nature Reserve is an important wetland that has supported more than 1% of the world population of Latham's Snipe (475 in 1997). Latham's Snipe have been counted by HBOC each December since 1997. Numbers drastically declined from a maximum of 475 in 1997 down to seven in 2002 (falling by half each year) before recovering to a total of 98 in 2006 (**Figure 3.6.1a**). The presence of the rare Painted Snipe is also notable. Black Swan nest at times and have been recorded in large numbers, up to 750 (**Figure 2.5.2b**). Twenty-two Significant Species have been recorded.

*Significant Species:*

Magpie Goose (20), occasionally recorded, recorded breeding
Freckled Duck (1), occasionally recorded
Chestnut Teal (300), regularly recorded, recorded breeding
Great Egret (10), regularly recorded
Cattle Egret (116), often recorded
Glossy Ibis (71), moderately often recorded
White Ibis (30), regularly recorded
Straw-necked Ibis (21-50), often recorded
Black-necked Stork (2), occasionally recorded
White-bellied Sea-Eagle (2), moderately often recorded
Latham's Snipe (475), frequently recorded during summer
Marsh Sandpiper (20+), occasionally recorded during summer
Common Greenshank (20-25), occasionally recorded during summer
Wood Sandpiper (7), occasionally recorded during summer
Red-necked Stint, occasionally recorded during summer
Pectoral Sandpiper, rarely recorded
Sharp-tailed Sandpiper (700), occasionally recorded during summer
Curlew Sandpiper (6-20)
Comb-crested Jacana (3), occasionally recorded
Painted Snipe (2), occasionally recorded
Red-necked Avocet (8), occasionally recorded
Double-banded Plover (6-20)

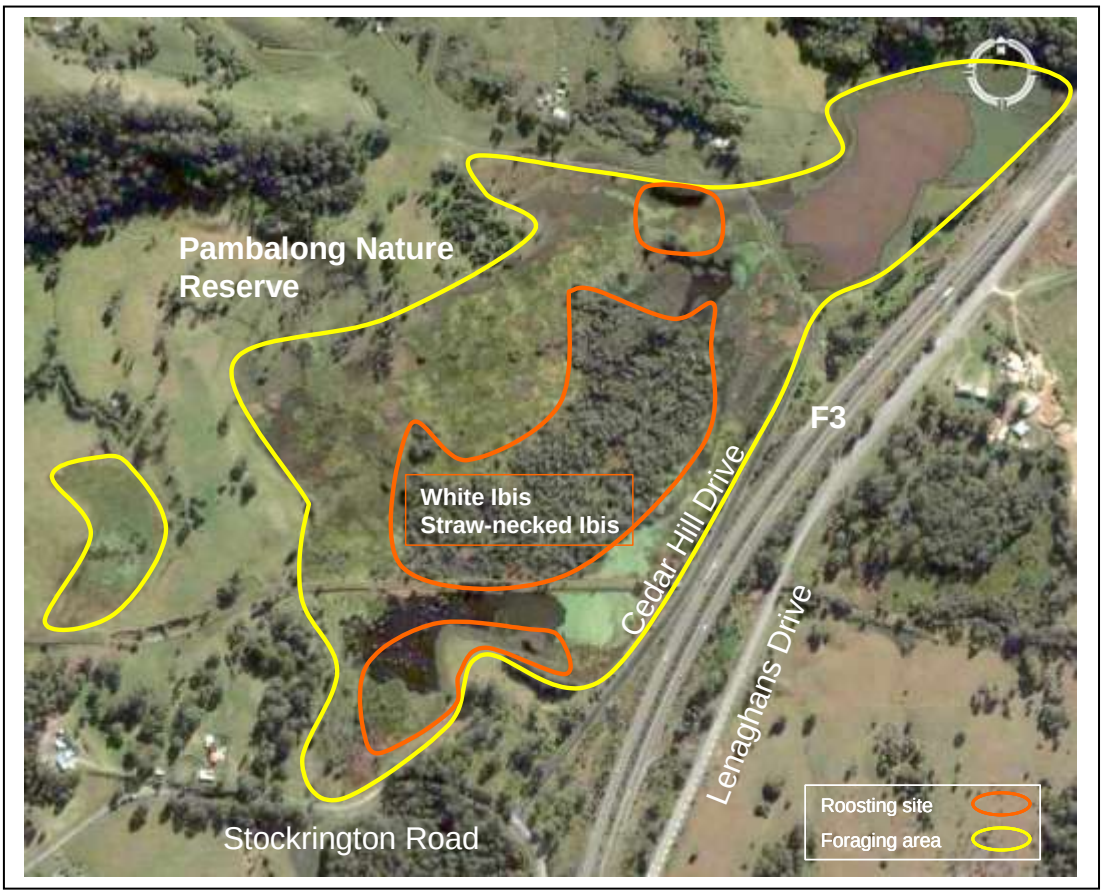



**Figure 2.5.2a.** Pambalong Nature Reserve and associated wetlands.

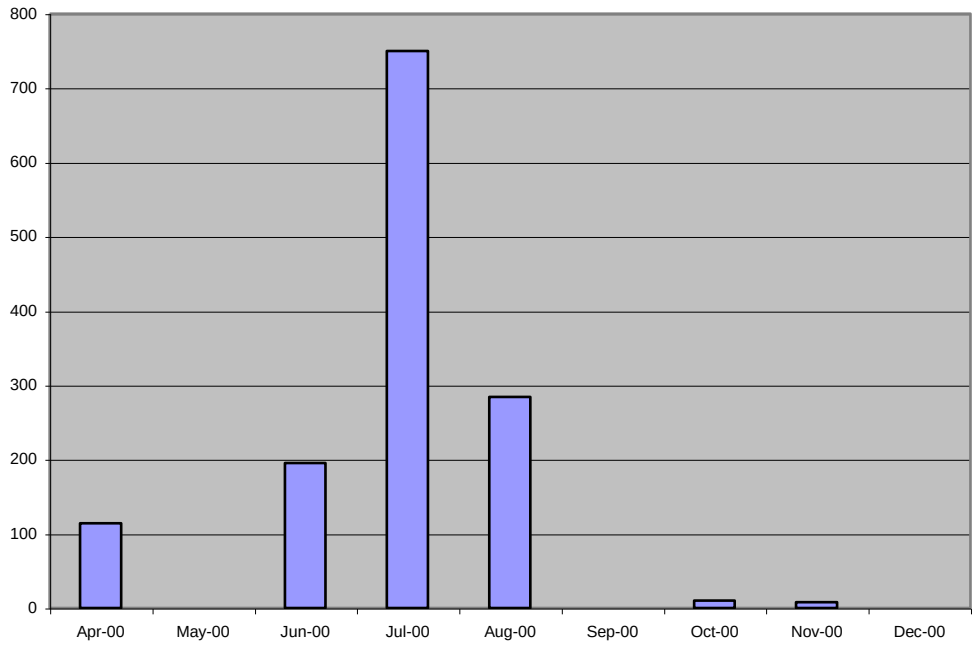



**Figure 2.5.2b.** Black Swan at Pambalong Nature Reserve, 2000 (Max Maddock).

### 2.5.3 Lenaghans Wetland

Lenaghans Wetland is dissected by roads into a series of ponds, sometimes overgrown with water hyacinth. It often hosts a large number of waterfowl. Notable species are the rare Blue-billed Duck, Freckled Duck, Painted Snipe and the migratory Latham's Snipe and Sharp-tailed Sandpiper. Sixteen Significant Species have been recorded at Lenaghans Wetland.

*Significant Species:*

Blue-billed Duck (1), occasionally recorded
Freckled Duck (8), occasionally recorded
Chestnut Teal (100+), regularly recorded
Great Egret (3), often recorded
Cattle Egret (6-20), moderately often recorded
Glossy Ibis (100+), occasionally recorded
Australian White Ibis (200+), regularly recorded
Straw-necked Ibis (400), often recorded
Black-necked Stork (2), rarely recorded
White-bellied Sea-Eagle (5), moderately often recorded
Latham's Snipe (30), moderately often recorded in summer
Marsh Sandpiper (1-2), rarely recorded
Sharp-tailed Sandpiper (400+), moderately often recorded
Painted Snipe (5), occasionally recorded
Comb-crested Jacana (1-5), occasionally recorded
Red-necked Avocet, occasionally recorded


**Figure 2.5.3.** Lenaghans Wetland.

## 2.5.4 Tank Paddock Wetland, Minmi Sewage Treatment Works and adjacent Wetlands

The wetland within Tank Paddock constitutes the western fringe of Hexham Swamp, but is separated from it by a fence line and a property boundary. The adjacent Hexham Swamp, in this area, consists of an extensive reed swamp. The Australasian Bittern is a notable record. The area should also host many crakes, rails and perhaps Little Bittern. Constructed ponds associated with the abandoned Minmi Sewage Treatment Works lie at the head of the swamp and support a variety of waterfowl (**Figure 2.5.4**). Nine Significant Species have been recorded.

*Significant Species:*

Cotton Pygmy Goose (1), one record
Chestnut Teal (60), regularly recorded
Great Egret (2), often recorded
Cattle Egret (21-50), regularly recorded
Australasian Bittern (1), occasionally recorded
Australian White Ibis (21-50), regularly recorded
Straw-necked Ibis (21-50), regularly recorded
White-bellied Sea-Eagle (2), frequently recorded
Latham's Snipe (1), occasionally recorded

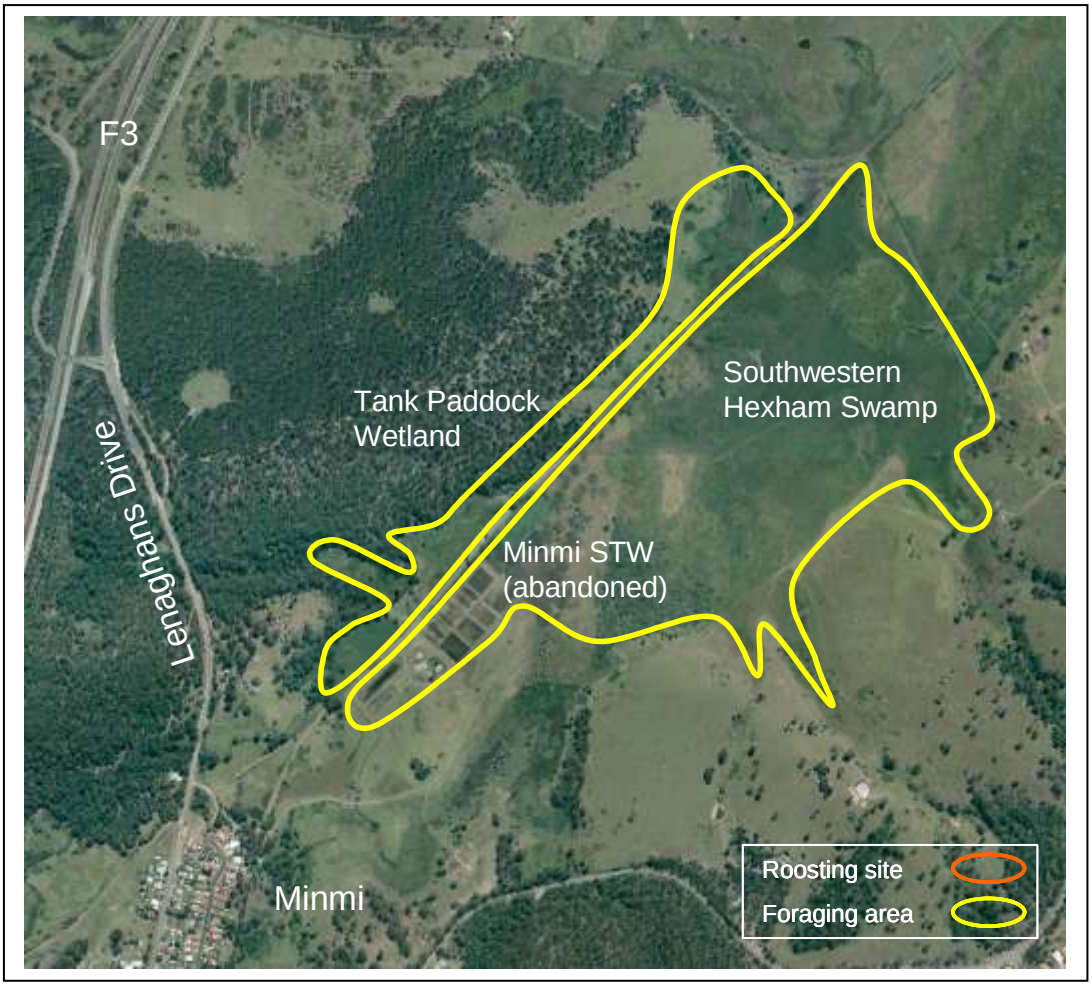



**Figure 2.5.4.** Tank Paddock Wetland, Minmi Sewage Treatment Works and adjacent southwestern extremity of Hexham Swamp.

### 2.5.5 Newcastle Wetlands Reserve and Golf Course Dam

Newcastle Wetlands Reserve is a significant location for nesting Darters, Great Cormorants and Pied Cormorants (**Figure 2.5.6**). Latham's Snipe are present around the margins of Newcastle Wetlands Reserve and the adjacent golf course dam. During the 1980s and early 1990s melaleucas in mid-swamp were used as a winter night roost for Cattle Egrets before departing on migration. Migrating egrets from northern NSW and Queensland colonies also used the roost to over-winter, or as a stopover en route to, or returning in spring from, areas further south (M. Maddock pers. comm.). Because counts for Newcastle Wetlands Reserve were often combined with the Hunter Wetlands Centre and Market Swamp, definitive maximum numbers for each species cannot be ascertained. A notable number of 73 Freckled Duck was recorded on the Golf Course Dam during the National Duck Count in 1983 (Wilma Barden pers. comm.). Bar-tailed Godwits and Pectoral Sandpipers were also recorded during the 1970s and early 80s when water levels fluctuated to a greater extent than they do now. Construction of access roads along the adjacent rail line and other works have modified drainage and dammed the water. Fourteen Significant Species have been recorded.

*Significant Species:*

Magpie Goose, often recorded, recorded breeding
Blue-billed Duck, Golf Course Dam
Freckled Duck (4), rarely recorded, Golf Course Dam (73), rarely recorded
Chestnut Teal (50-100), regularly recorded, recorded breeding
Great Egret, frequently recorded, recorded breeding, nocturnal roost
Cattle Egret (47), often recorded
Australasian Bittern (1), rarely recorded
Australian White Ibis (1,023), often recorded, recorded breeding
Straw-necked Ibis (2,640), often recorded
White-bellied Sea-Eagle (1), moderately often recorded
Latham's Snipe (55), occasionally recorded (also at adjacent Golf Course Dam)
Bar-tailed Godwit, 1970s to 80s
Pectoral Sandpiper, 1970s to 80s
Caspian Tern (1), rarely recorded

### 2.5.6 Market Swamp

Market Swamp is an elongate wetland that was once contiguous with Newcastle Wetlands Reserve and Hexham Swamp before being separated by construction of a railway (**Figure 2.5.6**). This has altered the swamp's hydrology, with permanently high water levels preventing the development of muddy margins suitable for Latham's Snipe, which used to be common. Casuarinas offer nesting sites for cormorants, Darters, and occasional Great Egrets. Waterfowl usually nest in the swamp. Because counts for Market Swamp were often combined with the Hunter Wetlands Centre and Newcastle Wetlands Reserve definitive maximum numbers for each species cannot be ascertained. Eleven Significant Species have been recorded at Market Swamp.

*Significant Species:*

Magpie Goose, regularly recorded, recorded breeding
Blue-billed Duck, rarely recorded
Freckled Duck (1), rarely recorded
Chestnut Teal, regularly recorded, recorded breeding
Great Egret, frequently recorded, recorded breeding, probable nocturnal roost
Cattle Egret, often recorded, recorded breeding

Australian White Ibis (1,545), often recorded
Straw-necked Ibis, moderately often recorded
White-bellied Sea-Eagle (1), moderately often recorded.
Latham's Snipe (60), occasionally recorded (often recorded prior to rail embankment works)
Yellow Wagtail (3), rarely recorded


**Figure 2.5.6.** Newcastle Wetlands Reserve, Market Swamp and Warabrook Wetland.

### 2.5.7 Warabrook Wetland

Warabrook Wetland is a moderately large pond, with a smaller adjacent pond, surrounded by grassland and dense urban housing (**Figure 2.5.6**). It hosts a surprising diversity of bird species. A variety of ducks, swans, moorhens, swamphens, coots, grebes, lapwings and a Nankeen Kestrel have been recorded nesting. Twelve Significant Species have been recorded there.

*Significant Species:*

Magpie Goose, rarely recorded
Blue-billed Duck (1), rarely recorded
Freckled Duck (6), rarely recorded
Chestnut Teal, (100+), regularly recorded, recorded breeding
Great Egret (2), regularly recorded
Cattle Egret, (2), moderately often recorded
Australian White Ibis, regularly recorded
Straw-necked Ibis, moderately often recorded
White-bellied Sea-Eagle, moderately often recorded
Latham's Snipe (2), rarely recorded
Red-necked Avocet, rarely recorded
Caspian Tern, rarely recorded

### 2.5.8 Hunter Wetlands Centre

The Hunter Wetlands Centre is an artificial complex of freshwater ponds successfully re-developed from a former rubbish dump and sporting complex that was originally a wetland area. It now supports a wide variety of waterbirds (**Figure 2.5.8**). Because the wetlands are often visited many records are available that attest to the diversity of birdlife. However, observations of abundance have not been regularly recorded. It is, therefore, difficult to document population trends for most species that occur there. A variety of small to medium-sized migratory shorebirds and non-migratory shorebirds often use the wetlands. The Centre contains a major rookery and nocturnal roost for all four species of egret, Australian White Ibis, Little Black and Little Pied Cormorants. It is also an important diurnal roost for Nankeen Night Herons and, although juveniles have been observed, there is no definite confirmation of nesting for this species. Twenty-eight Significant Species have been recorded at the Hunter Wetlands Centre since 1991 including many "Other Species" of waterbirds, many of which nest there.

*Significant Species:*

Magpie Goose, (93), regularly recorded, recorded breeding
Blue-billed Duck (1), rarely recorded
Freckled Duck (8), occasionally recorded
Chestnut Teal (100-200), regularly recorded, recorded breeding
Great Egret (20+), major rookery and nocturnal roost
Cattle Egret, (100s), major rookery and nocturnal roost
Australasian Bittern (1), likely to be breeding, rarely seen
Glossy Ibis (40), occasionally observed
Australian White Ibis (1,000s), nocturnal roost, recorded breeding
Straw-necked Ibis (1,000s), major nocturnal roost
Black-necked Stork (3), rarely recorded
Osprey (1), recorded once
Square-tailed Kite (1), recorded only once
White-bellied Sea-Eagle (2), often observed

Latham's Snipe (20), moderately often recorded
Bar-tailed Godwit (3), rarely recorded
Marsh Sandpiper (7), occasionally recorded
Common Greenshank (1-5), occasionally recorded
Wood Sandpiper (1), rarely recorded
Pectoral Sandpiper (2), recorded once
Sharp-tailed Sandpiper (160), moderately often recorded
Curlew Sandpiper (1-5), occasionally recorded
Red-necked Avocet (41), moderately often recorded
Painted Snipe (1), rarely recorded
Comb-crested Jacana (1), rarely recorded
White-winged Black Tern (1-2)
Masked Owl (1), moderately often recorded
Yellow Wagtail (2), rarely recorded


**Figure 2.5.8.** The Hunter Wetlands Centre.

## 2.5.9 Newcastle University Wetland

Newcastle University Wetland is a tiny, but important, wetland for a regularly nesting pair of Grey Goshawks, the cryptic Lewin's Rail and a variety of waterfowl (**Figure 2.5.9**). Purple Swamphens and Dusky Moorhens also regularly nest there. Five Significant Species have been recorded, notably both the Black Bittern and the Australasian Bittern.

*Significant Species:*

Magpie Goose
Chestnut Teal (6), often recorded
Great Egret (1), occasionally recorded
Black Bittern
Australasian Bittern (1), one recorded

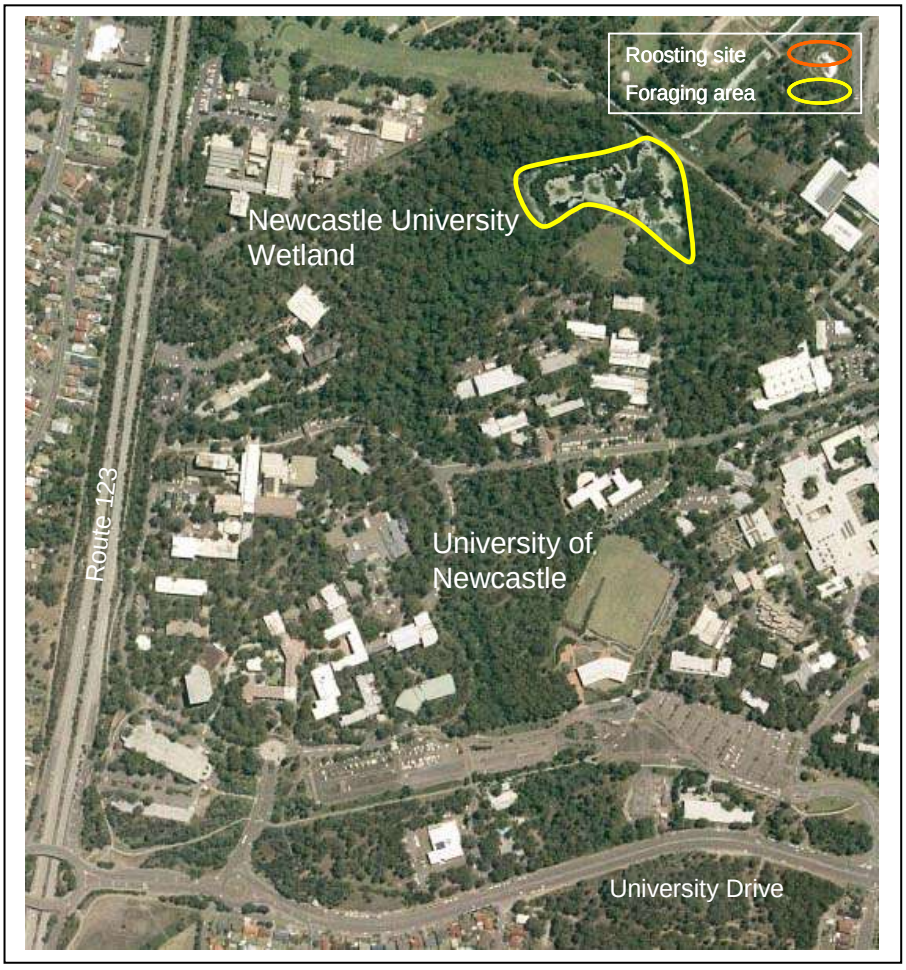



**Figure 2.5.9.** Newcastle University Wetland.

## 2.5.10 Antennae Wetland

Antennae Wetland is a reed-fringed pond with a transmitting tower in the middle (**Figure 2.5.10).** Regular surveys are not conducted and only sporadic records are available. Two significant Species have been observed.

*Significant Species*:

Magpie Goose
Great Egret


**Figure 2.5.10.** Antennae Wetland.

## 2.6 WETLANDS UPSTREAM OF HEXHAM BRIDGE

### 2.6.1 Tarro Swamp and Recreation Area

At Tarro, two wetland areas are separated by a rail line (**Figure 2.6.1a**). The Tarro Recreation Area south of the rail line consists of a pond hosting a variety of waterfowl, cormorants and Darters, and a small casuarina-covered island that hosts roosting ibis. Tarro Swamp, to the north of the railway, is a shallow ephemeral wetland with stands of casuarina. Tarro Swamp is also an important winter night-roost for Cattle Egrets migrating through the Hunter Estuary from northern NSW and Queensland colonies to locations further south and on the return journey. Tarro Swamp is also used by Cattle Egrets from Seaham Swamp and the Hunter Wetlands Centre on their outward migration (M. Maddock pers. comm.). Black Swans (100) have been recorded breeding. Three species of small to medium-sized shorebirds have also been recorded: Latham's Snipe, Marsh Sandpiper and Sharp-tailed Sandpiper. Tarro Swamp and Recreation Area is a significant nocturnal roost for Australian White Ibis and Straw-necked Ibis (**Figure 3.2.7c**). Black Swans were counted for a few months during 2000 (**Figure 2.6.1b**). Fourteen Significant Species are listed.

*Significant Species*:

Freckled Duck (3), occasionally recorded
Chestnut Teal (50), regularly recorded
Great Egret (4), frequently recorded
Cattle Egret (25), often recorded
Glossy Ibis (20), occasionally recorded
Australian White Ibis (66), often recorded
Straw-necked Ibis (669), frequently recorded
Black-necked Stork (3), rarely recorded
Square-tailed Kite (1), rarely recorded
White-bellied Sea-Eagle (1), often observed
Latham's Snipe (3), occasionally recorded
Marsh Sandpiper (8), rarely recorded
Sharp-tailed Sandpiper (200+), occasionally recorded
Comb-crested Jacana (3), rarely recorded


**Figure 2.6.1a.** Tarro Swamp and Tarro Recreation Area.

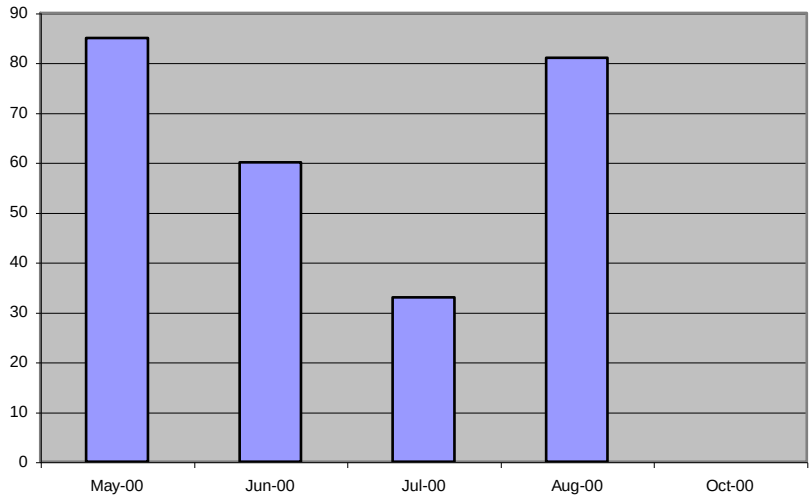



**Figure 2.6.1b.** Black Swan at Tarro Swamp, 2000 (Max Maddock).

### 2.6.2 Woodberry Swamp

Woodberry Swamp consists of a large freshwater pond in the southwest, and a smaller pond to the east, passing northwards to an extensive expanse of reeds and coarse grass. It is bounded by the Main Northern Railway to the southwest, by the suburbs of Thornton to the west and Woodberry to the southeast (**Figure 2.6.2**). Twelve Significant Species have been recorded although many more are possible. There are insufficient records to comment on the status of each species at Woodberry Swamp.

*Significant Species*:

Magpie Goose (7)
Chestnut Teal (300)
Great Egret
Cattle Egret
Glossy Ibis (23)
Australian White Ibis
Straw-necked Ibis
Black-necked Stork (3)
White-bellied Sea-Eagle
Sharp-tailed Sandpiper (350+)
Red-necked Avocet (200)
White-winged Black Tern (15)

Although not recorded in the relatively few detailed observations, Woodberry Swamp has suitable habitat to host additional *Significant Species* such as:

Magpie Goose
Blue-billed Duck
Freckled Duck
Australasian Bittern
Black-necked Stork
Brolga
Latham's Snipe
Marsh Sandpiper
Wood Sandpiper
Painted Snipe
Grass Owl

*Other Species* recorded include a wide variety of waterfowl from swans, ducks, grebes and lapwings, to grassbirds and cisticolas. A total of about 900 waterfowl and 350 Black-winged Stilt were counted in March 2007 (**Appendix 2**). The most commonly recorded species of waterfowl were:

Black Swan
Australian Wood Duck
Pacific Black Duck
Australasian Shoveler
Grey Teal
Chestnut Teal
Pink-eared Duck
Hardhead
Australasian Grebe

Although not recorded, cryptic species such as crakes, rails and bitterns should be present.

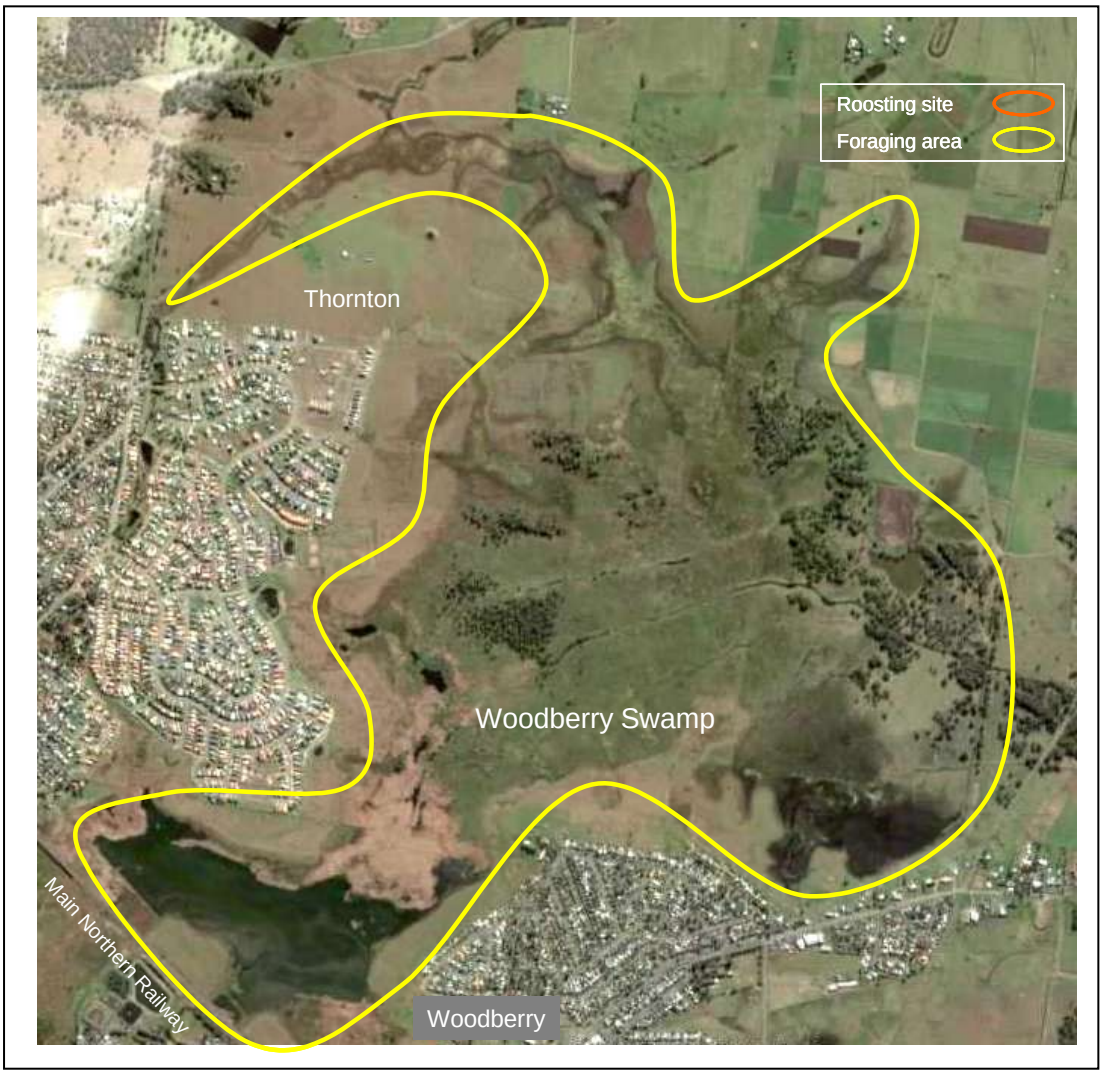



**Figure 2.6.2.** Woodberry Swamp.

### 2.6.3 Ross Wallbridge Reserve

Ross Wallbridge Reserve, at Raymond Terrace, is an artificially manicured wetland that provides habitat for the more common waterfowl (**Figure 2.6.4a**). Ross Wallbridge Reserve provides a significant diurnal roost for Nankeen Night Heron. As many as 85 Nankeen Night Heron have been recorded roosting there. There is a general trend for more birds to roost in the cooler months and less during summer, although there are exceptions (**Figure 2.6.3**). The area is not regularly monitored and only four Significant Species have been recorded.

*Significant Species:*

Chestnut Teal (1-5), moderately often observed (M. Maddock pers. comm.)
Australian White Ibis (5), regularly observed (M. Maddock pers. comm.)
Straw-necked Ibis (42), regularly observed (M. Maddock pers. comm.)
Latham's Snipe (1), occasionally observed (Waterhouse 1986a)

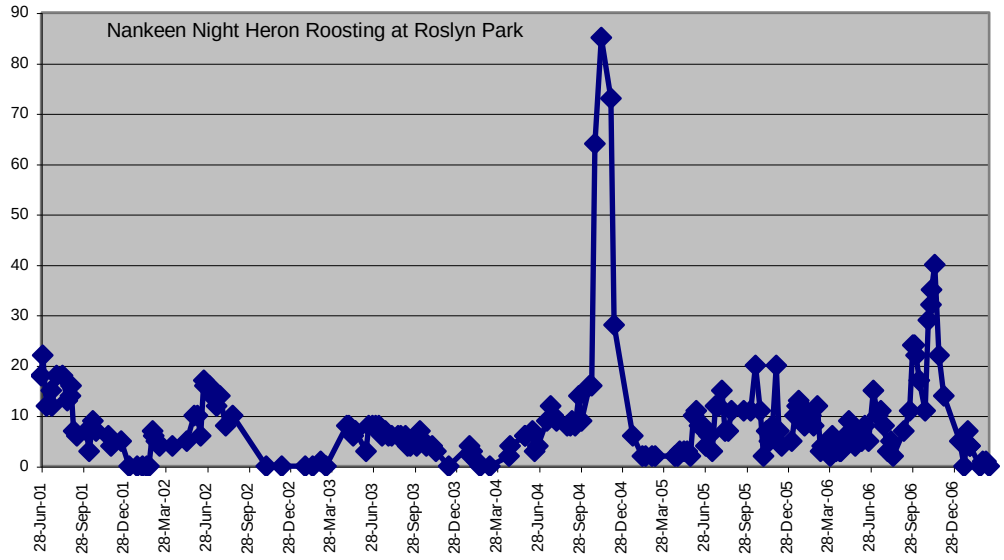



**Figure 2.6.3.** Nankeen Night Herons roosting at Ross Wallbridge Reserve, 2001 to 2006 (Max Maddock).

## 2.6.4 Newline Road Swamp (Richardsons)

Systematic surveys for all species have not been carried out on a regular basis at this reed-fringed pond near Raymond Terrace (**Figure 2.6.4a**). At times a large number and variety of waterbirds are present. The following species have been recorded in the HBOC Annual Reports: Mallard (1-5), Pacific Black Duck (21-50), Grey Teal (170), Australasian Grebe (21-50), White-necked Heron (3-5), Cattle Egret (100-300), Nankeen Night Heron (1-5), Glossy Ibis (1-5), Australian White Ibis (100-150), Yellow-billed Spoonbill (7), Nankeen Kestrel (3), Black-winged Stilt (21-50), Silver Gull (100-200). Pelican counts were carried out for a brief period during 2001 (**Figure 2.6.4b**). During the 1980s and 1990s, Newline Road Swamp was used as a winter roost for Cattle Egrets migrating through from northern NSW and Queensland. However, the construction of a causeway from Newline Road to the Riverview Housing Estate caused major hydrological changes and a subsequent decline in aquatic vegetation, resulting in a decline in the diversity and abundance of birds (M. Maddock pers. comm.). Seven Significant Species have been recorded.

*Significant Species:*

Chestnut Teal (34), prior to causeway construction
Cattle Egret (300+), night roost, prior to causeway construction
Glossy Ibis (1-5)
Australian White Ibis (100-150)
Straw-necked Ibis
Sharp-tailed Sandpiper (60), prior to causeway construction
Caspian Tern (12) (Waterhouse 1986a)


**Figure 2.6.4a.** Newline Road Swamp and Ross Wallbridge Reserve.

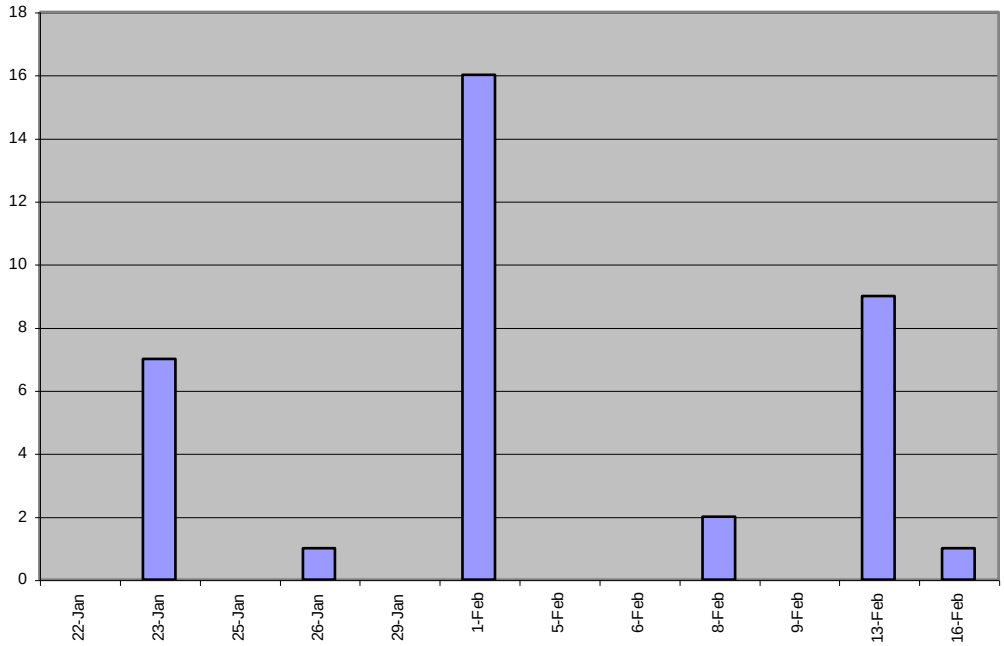



**Figure 2.6.4b.** Pelicans at Newline Road Swamp, January to February 2001 (Max Maddock).

## 2.6.5 Bedminster Swamp

This pond, regularly surveyed by Max Maddock since 2001, has been compromised by the successive construction of roads that have segmented and reduced the area of wetland (**Figure 2.6.6b**). Ten Significant Species have been recorded.

*Significant Species:*

Chestnut Teal (40), occasionally recorded
Great Egret (6), regularly recorded
Glossy Ibis (1-5)
Australian White Ibis (80), moderately often recorded
Straw-necked Ibis (1000), moderately often recorded
Black-necked Stork (2), single record (2/01/01)
Latham's Snipe (1), occasionally recorded
Red-necked Stint (1-5)
Sharp-tailed Sandpiper (32), occasionally recorded
Caspian Tern (3), occasionally recorded

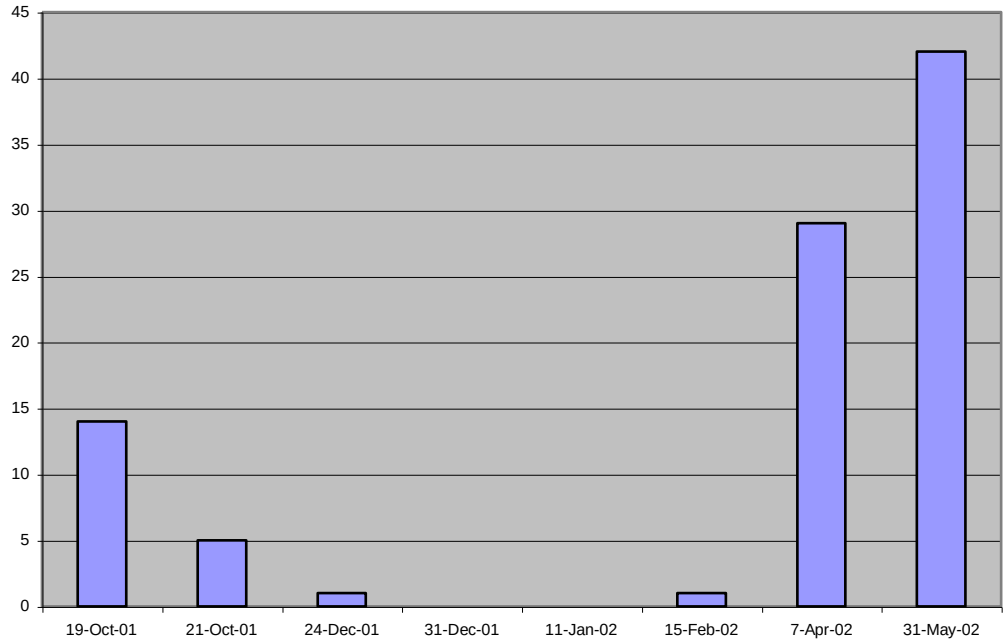



**Figure 2.6.5.** Eurasian Coot at Bedminster Swamp, 2001 to 2002 (Max Maddock).

## 2.6.6 Irrawang Swamp

Irrawang Swamp is a shallow reed-fringed pond with scattered casuarinas adjacent to the Williams River, north of Raymond Terrace (**Figure 2.6.6b**). It is a major nocturnal roost for Australian White Ibis and Straw-necked Ibis with as many as 13,509 undifferentiated ibis recorded during 2001 (**Figures 3.2.7d** and **3.2.7e**, for the period 2000 to 2001). Latham's Snipe are often present in significant numbers. They reached a maximum number of 73 during 2004, but have declined to zero during 2007 (**Figure 3.6.1b**). Irrawang Swamp is used as a winter night-roost for Cattle Egrets migrating south from northern NSW and Queensland. Counts of pelicans were carried out during 2001 (**Figure 2.6.6a**). The first definitive surveys were carried out in 1987 (Shortland Wetlands Centre 1987-1991). Thirteen Significant Species have been recorded.

*Significant Species:*

Chestnut Teal (140), often recorded
Cattle Egret (300)
Great Egret (10), often recorded
Glossy Ibis (50+), occasionally recorded
Australian White Ibis (750), moderately often recorded
Straw-necked Ibis (1,250), regularly recorded
Black-necked Stork (3), occasionally recorded
White-bellied Sea-Eagle (3), regularly recorded
Latham's Snipe (73), regularly recorded in summer
Marsh Sandpiper (4), occasionally recorded in summer
Red-necked Stint (1-5), occasionally recorded in summer
Sharp-tailed Sandpiper (130), often recorded in summer
Painted Snipe (2), single record

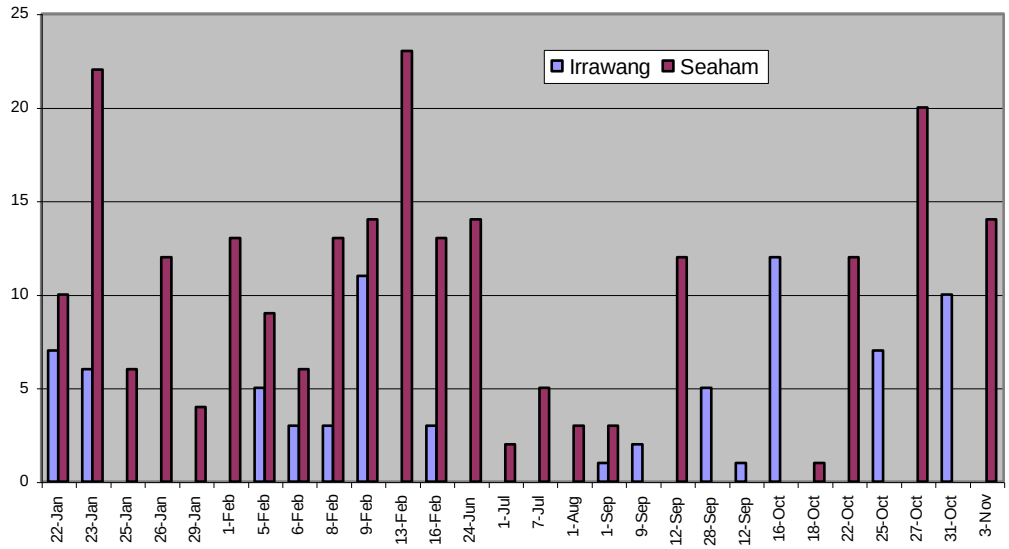



**Figure 2.6.6a.** Pelicans at Irrawang Swamp and Seaham Swamp Nature Reserve during 2001 (Max Maddock).

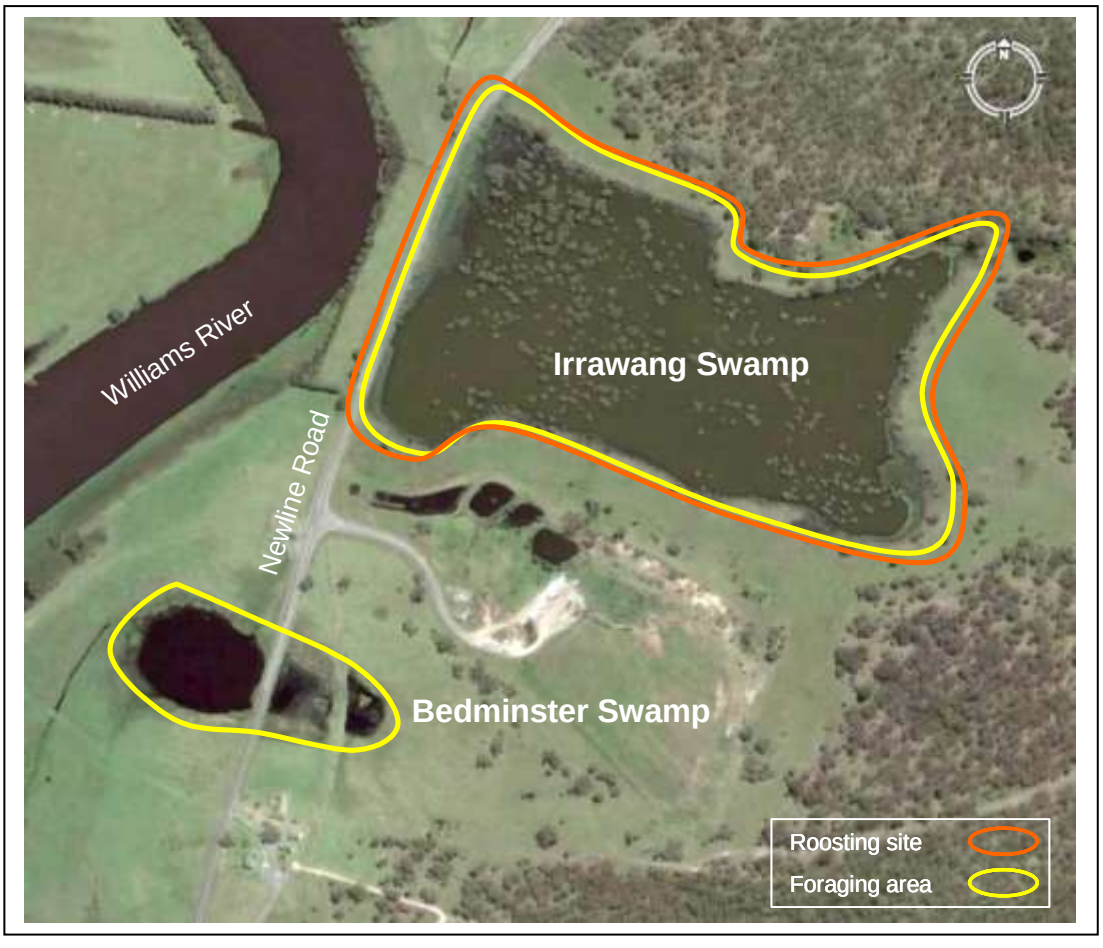



**Figure 2.6.6b.** Irrawang Swamp and Bedminster Swamp.

### 2.6.7 Grahamstown Dam

Grahamstown Dam is part of the water supply system for Newcastle and is a huge body of moderately deep open fresh water (**Figure 2.6.7**). Therefore, it has a variety of deep-diving waterbirds such as Musk Duck (40), Hardhead (174), Hoary-headed Grebe (130), Australasian Grebe (46), Great Crested Grebe (200+), Darter (6) and four species of cormorants. However, observations are usually carried out only at the southern end of the dam. Most of the dam has not been surveyed by HBOC. It is evident that the dam is a highly significant location for large numbers of birds at times. Many birds would inhabit the numerous shallower bays and inlets that are out of sight to most observers. Sixteen Significant Species have been recorded.

*Significant Species:*

Blue-billed Duck (2)
Freckled Duck (4)
Chestnut Teal, occasionally recorded
Great Egret (8)
Cattle Egret (14)
Australian White Ibis (6)
Straw-necked Ibis (18)
Black-necked Stork (1), rarely recorded
White-bellied Sea-Eagle (2)
Latham's Snipe (3)
Red-necked Stint
Sharp-tailed Sandpiper
Painted Snipe
Crested Tern
Common Tern
White-winged Black Tern (150)

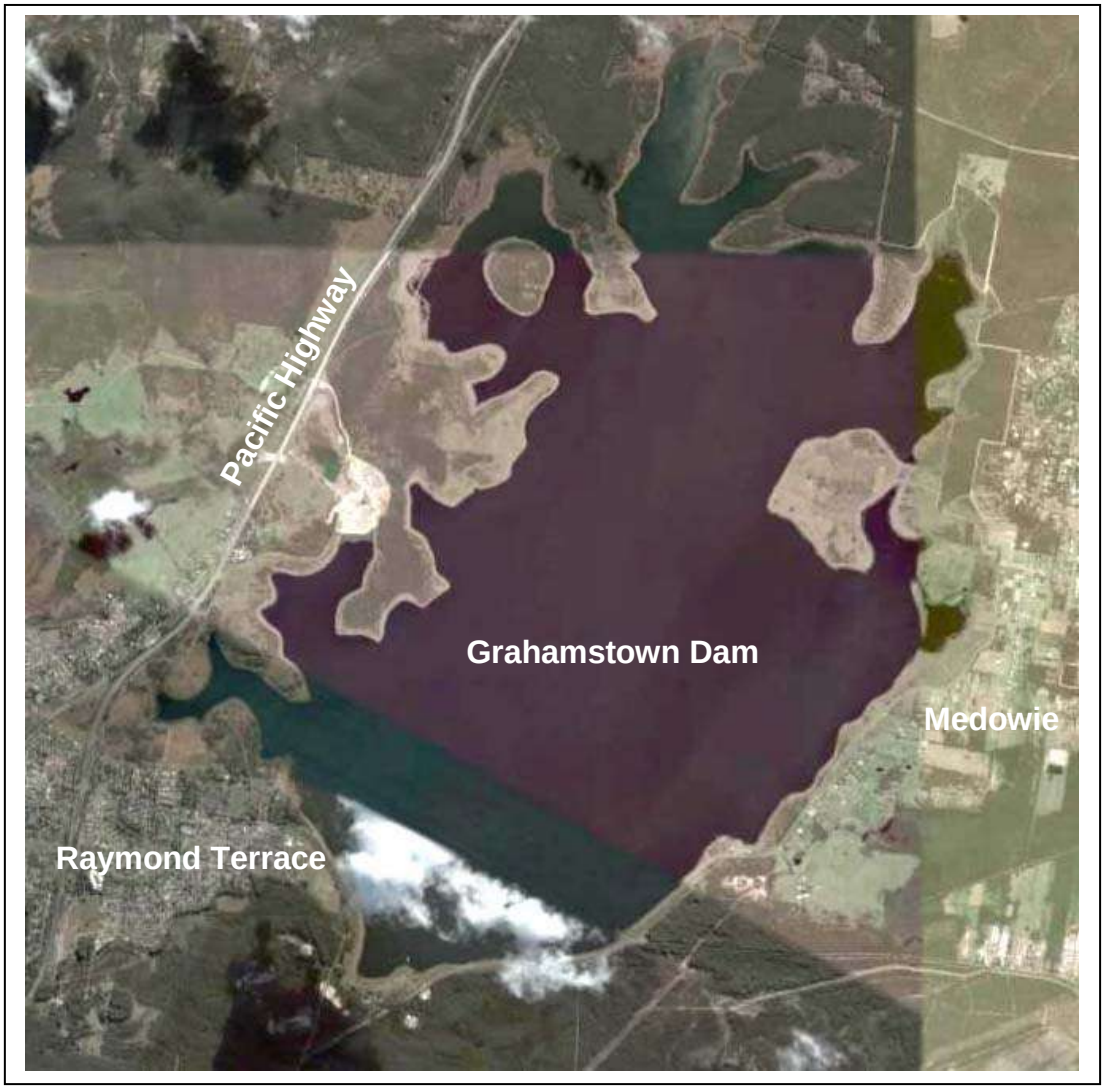



**Figure 2.6.7.** Grahamstown Dam.

## 2.6.8 Seaham Swamp Nature Reserve

Seaham Swamp is a medium-sized body of shallow water fringed by paperbark trees (**Figure 2.6.8**). The swamp is a major rookery for Cattle Egret that nest in fringing paperbark trees (**Figures 2.6.8, 3.2.2a** and **3.2.2b**). It is also an important night-roost during winter for up to several hundred Cattle Egrets that migrate from northern NSW and Queensland to the Hunter Region. It is also used as a stopover for egrets in transit to areas further south and on return in spring. Numbers are higher in late summer and decline as winter progresses. Numbers increase again as the nesting season approaches (M. Maddock pers. comm. and Raine 1996). Seaham Swamp hosts a variety of waterfowl, Royal Spoonbills (60), Yellow-billed Spoonbills (4), Darters and cormorants. Twelve Significant Species have been recorded.

*Significant Species:*

Magpie Goose (24)
Chestnut Teal (10)
Great Egret (6)
Cattle Egret (300+), recorded breeding
Glossy Ibis (1-5)
Australian White Ibis
Straw-necked Ibis
Black-necked Stork (3)
Osprey, occasional observations
White-bellied Sea-Eagle, often seen
Latham's Snipe (30+), occasionally observed
Comb-crested Jacana (2), recorded breeding

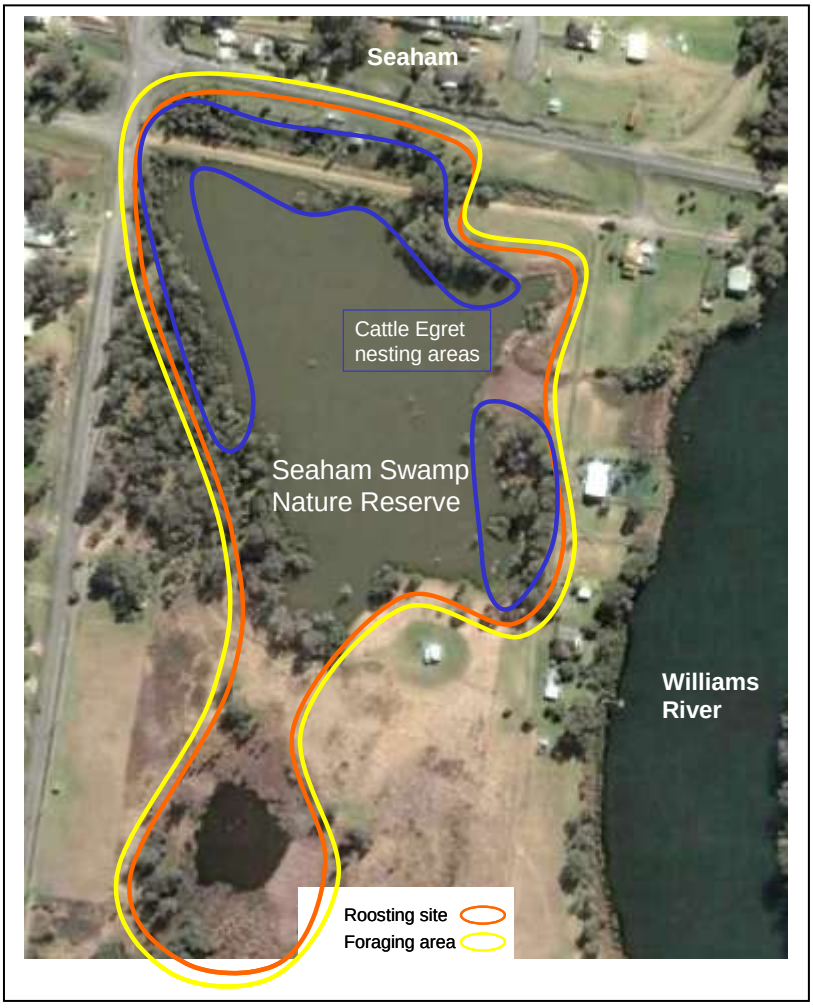



**Figure 2.6.8.** Seaham Swamp Nature Reserve.

## 2.7 DISCUSSION – SIGNIFICANT WETLANDS

In an attempt to rank the significance of wetlands throughout the Hunter Estuary, the number of Significant Species recorded at each locality was used (**Table 2.7.1**). Four areas are outstanding as biodiversity and abundance hotspots:

- Stockton Sandspit
- Ash Island (all ponds)
- Kooragang Dykes and Ponds
- Hunter Wetlands Centre

It is interesting to note that Stockton Sandspit has undergone extensive rehabilitation by removal of mangroves and weeds and is undergoing constant maintenance. Prior to this work the sandspit had largely been abandoned by most birds. Ash Island ponds have also undergone rehabilitation by the removal of mangroves. The Kooragang Dykes and Dyke Ponds are also suffering from mangrove encroachment and erosion. The Hunter Wetlands Centre has been recreated from a rubbish dump and playing fields. All these top wetland locations have either been artificially created or strongly modified. This indicates that "natural areas" in the estuary are in sub-optimal condition because estuary-dependant birds are using the modified areas instead.

**Table 2.7.1 – Hunter Estuary wetlands ranked according to the number of Significant Species.**

| | | | |
|---|---|---|---|
| Stockton Sandspit | 38 | Seaham Swamp Nature Reserve | 12 |
| Ash Island (includes all ponds) | 37 | Market Swamp | 11 |
| Kooragang Dykes and Ponds | 32 | Bedminster Swamp | 10 |
| Hunter Wetlands Centre | 28 | Melaleuca/Water Ribbon Swales | 10 |
| Swan Pond | 28 | Sharpies Flat | 9 |
| Deep Pond | 24 | Tank Paddock | 9 |
| Pambalong Nature Reserve | 22 | Stony Point | 8 |
| Stockton Channel | 22 | BHP Moat | 7 |
| Wader Pond | 21 | Newline Road Swamp | 7 |
| Hexham Swamp | 20 | Teal Waters | 8 |
| Fern Bay | 20 | Tomago Wetlands | 5 |
| Big Pond (pre 2000) | 18 | Newcastle University Wetland | 5 |
| Grahamstown Dam | 16 | Throsby Creek | 5 |
| Fullerton Cove Beach | 16 | Scotts Point | 5 |
| Lenaghans Wetland | 16 | Ross Wallbridge Reserve | 4 |
| North Arm Sandflats | 14 | Long Pond | 3 |
| Tarro Swamp | 14 | North Arm Point Bar | 2 |
| Newcastle Wetlands Reserve | 14 | Tomago Ibis Roost | 2 |
| Irrawang Swamp | 13 | Blue-billed Duck Pond | 2 |
| Milhams Pond | 13 | Antennae Wetland | 2 |
| Fish Fry Flats | 13 | Sandy Island Beach | 2 |
| Phoenix Flats | 13 | Juncus Swamp | 2 |
| Warabrook Wetland | 12 | Smiths Island | 1 |
| Woodberry Swamp | 12 | Mosquito Creek | 1 |

Ash Island ranks highly because it is a collection of wetlands; therefore, it cannot be compared directly with individual wetlands. However, it was instructive to include it on the list. Swan Pond and Deep Pond, adjacent wetlands separated by the industrial railway, are next on the list. It is mainly because of Swan Pond and Wader Pond, that Ash Island ranks very highly. Swan Pond and the adjacent highly-ranked Wader Pond have undergone rehabilitation by removal of mangroves.

The Hunter Wetlands Centre, Pambalong Nature Reserve and Hexham Swamp have the greatest biodiversity of the mainly freshwater wetlands in the estuary.

Stockton Channel, although about half the biodiversity of the adjacent Stockton Sandspit, ranks surprisingly high, reminding us that even heavily urbanized and industrialized parts of the estuary downstream of Stockton Bridge are important to the overall biodiversity of the Hunter Estuary.

It is important to regard the ranking list as only a rough guide for the following reasons:

1. It is not accurate in the sense that the number of species recorded at a location depends to some extent on the time spent by observers at that locality.
2. The more visited and monitored sites record a greater diversity and abundance of birds. However, the converse is also true in that the locations that have greater biodiversity are often the most visited.
3. Those locations ranked very low are usually seldom visited, are very small, or are not as complex a wetland when compared to the higher ranked localities.

Many of the highly ranked locations are either artificially constructed or human-modified wetlands! The success of human-modified locations in providing habitat for birds is, to some extent, reassuring, showing that managed or newly created habitats can be an important and necessary part of environmental management.

This method of assessing the relative importance of each wetland should be regarded as very limited. It does not take into account wetlands that;

- may be low on absolute numbers of significant bird species, but may contain important species that do not occur at many, or any, of the other wetlands;
- may have endangered or vulnerable species;
- may have large numbers of only one or two species;
- may be important as a breeding, roosting or foraging area.

It is also important to emphasise that many birds use areas of the Hunter Estuary that have not been included in the 50 specific wetland locations discussed here, although such areas mostly have less biodiversity and abundance. Birds have evolved to use every part of the entire estuary for their survival.

Each wetland is unique. Variations in water level depend on location within the estuary and local weather conditions, and variations are vital to sustain biodiversity. Over time, the abundance and diversity of birds fluctuates dramatically for each wetland. Thus, it is important for the viability of the Hunter Estuary, that a complex variety of individual wetlands should be maintained. The importance of wetlands should be both individually and collectively assessed. It is vital to maintain a variety of individual wetlands for all phases of the bird's life-cycle such as breeding, foraging and roosting.

The largest rookeries (breeding sites) are located at:

- the Hunter Wetlands Centre
- Seaham Swamp Nature Reserve
- Market Swamp
- Newcastle Wetlands Reserve.

The largest roosting sites according to the abundance of roosting birds are:

- Stockton Sandspit
- Kooragang Dykes
- all Ash Island Ponds
- Deep Pond

- the Hunter Wetlands Centre
- Irrawang Swamp
- Tarro Swamp
- Tomago Ibis Roost
- Windeyers Reach Nocturnal Roost.

However, there are roost sites that may not be important in terms of abundance, but are unique roosts for particular species, such as Fern Bay (Terek Sandpipers and Grey-tailed Tattlers) and Stony Point (Ruddy Turnstones). Some wetlands become important during different seasons such as the Juncus Swamp, which is a winter nocturnal roost for Bar-tailed Godwits.

Different species may use different foraging areas. However, the most important foraging areas in terms of the number of birds are:

- Fullerton Cove
- North Arm Sandflats
- Kooragang Dyke Ponds
- Stockton Sandspit foreshore
- Deep Pond
- Swan and Wader Ponds (Area E, Ash Island)

If there is one wetland that could be singled out as the most important wetland in the entire estuary it is Fullerton Cove. It is not regularly or comprehensively monitored because of access difficulties and, therefore, it has not been ranked in **Table 2.7.1**. However, the majority of all shorebirds in the Hunter Estuary forage in the cove during low tide.

# 3.0 SIGNIFICANT SPECIES

Birds are included as *Significant Species* for this discussion if they:

1. are classified as vulnerable or endangered on Schedule 2 of the NSW *Threatened Species Conservation Act* 1995 (TSC Act).
2. are listed under the China Australia Migratory Bird Agreement (CAMBA) and/or the Japan Australia Migratory Bird Agreement (JAMBA) and the *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act).
3. satisfy the criteria to qualify an area as an Important Bird Area (IBA) (see www.birdsaustralia.com.au/projects/ibas/index.html).

The 66 Significant Species are discussed in taxonomic order following Christidis and Boles (1994) (**Table 3.0, Appendix 1**). Locations where a species has been recorded are listed under each species description (species are also listed for each wetland location in **Section 2.0**). The maximum number of each species recorded (mostly since 1993) is shown in brackets after each location. Where a definite count was not undertaken, numbers are often expressed as a range, e.g. 1-5. Otherwise numbers reflect an accurate count, although in some cases the entire wetland may not have been surveyed. Therefore, numbers should generally be regarded as minimum counts of birds present in any one area.

*Species Status*

Discussion of a species' status in HBOC's Hunter Region Annual Bird Report (HRABR) (Stuart 1994-2006) refers to the species' status generally within the Hunter Region. For some species this may differ for the more geographically constrained Hunter Estuary. Hence, where considered necessary, the HRABR status has been restated to refer specifically to the Hunter Estuary area only. In discussing the status of each species the following terms are used:

- **Resident:** Recorded in all months;
- **Migrant:** Species that come to an area for a period of time and then depart;
- **Bird of passage:** Species present in a suitable area for a relatively short period, and equally likely to be observed in any month of the year;
- **Common:** Species that one can *expect* to find on all visits to suitable habitats;
- **Usual:** Equally likely to be found in suitable habitats, but not on all visits;
- **Uncommon:** Species that are recorded infrequently on visits to suitable habitats;
- **Rare:** Species recorded only a few times a year;
- **Accidental:** Species recorded less than once per year, over a 10-year average.

*Trends in Abundance*

Trends in abundance for each species are discussed, for the period April 1999 to March 2007, using graphs constructed from detailed, comprehensive HBOC monthly shorebird counts. Note that the graphs derived from the counts, refer only to locations on Ash Island, Kooragang Island and along the North Arm of the Hunter River (as listed in **Sections 2.1, 2.2, 2.3 & 2.4**). These graphs do not include Throsby Creek, Mosquito Creek, Windeyers Reach or Tomago Ibis Roost. Numerical data on species abundance from most other wetlands is usually insufficient to determine population trends, except where particular species have been monitored, such as ibis, egrets or Latham's Snipe.

Longer-term trends are also discussed using historical data. Monitoring the number of shorebirds in the Hunter Estuary first commenced in the early 1970s (no records are available prior to this time). Surveys were sporadic, often only one count in summer and one

count in winter, and did not cover as many localities simultaneously as HBOC's monthly shorebird counts conducted since 1999. Therefore, care must be taken when comparing present population trends with the past. Nevertheless comparison of this early data with HBOC's 1999-2007 data is attempted herein to gain some insight into long-term trends in species abundance.

Data on species distribution, abundance and status has been compiled from several sources:

1. HBOC club outing data (**Appendix 2**).
2. HBOC monthly shorebird counts (**Appendix 3**)
3. Hunter Region Annual Bird Reports (Stuart 1994-2006) (**Appendix 6**).
4. Personal observations from individual HBOC members (incorporated in **Appendix 2**).
5. Stuart (2002), Stuart (in prep.), Spencer (in prep.) and other published literature (**Appendices 4** and **5**).

Data has been compiled on Excel spreadsheets for each significant location in the Hunter Estuary, listed alphabetically (**Appendices 2** and **3**).

Maddock (pers. comm. 2007) has suggested that the following species, listed herein under Other Species (**Section 4.0**), are under extreme pressure locally and should be regarded as threatened species and, therefore, would be better listed as Significant Species:

Intermediate Egret
Little Egret
Little Bittern
Buff-banded Rail
Lewin's Rail
Baillon's Crake
Australian Spotted Crake
Spotless Crake
Banded Lapwing

**Table 3.0 - Significant Species[1]**

| Tax order | Spp # | Common name | *Scientific name* | NSW listing | CAMBA JAMBA | Notes |
|---|---|---|---|---|---|---|
| 15 | 199 | Magpie Goose | *Anseranas semipalmata* | VU | | |
| 19 | 216 | Blue-billed Duck | *Oxyura australis* | VU | | |
| 21 | 214 | Freckled Duck | *Stictonetta naevosa* | VU | | |
| 30 | 200 | Cotton Pygmy-goose | *Nettapus coromandelianus* | EN | | |
| 35 | 905 | Northern Shoveler | *Anas clypeata* | | C | vagrant |
| 37 | 210 | Chestnut Teal | *Anas castanea* | | | IBA |
| 146 | 187 | Great Egret | *Ardea alba* | | J, C | |
| 148 | 977 | Cattle Egret | *Ardea ibis* | | J, C | |
| 155 | 196 | Black Bittern | *Ixobrychus flavicollis* | VU | | |
| 156 | 197 | Australasian Bittern | *Botaurus poiciloptilus* | VU | | IBA |
| 157 | 178 | Glossy Ibis | *Plegadis falcinellus* | | C | |
| 158 | 179 | Australian White Ibis | *Threskiornis molucca* | | | IBA |
| 159 | 180 | Straw-necked Ibis | *Threskiornis spinicollis* | | | IBA |
| 162 | 183 | Black-necked Stork | *Ephippiorhynchus asiaticus* | EN | | |
| 164 | 241 | Osprey | *Pandion haliaetus* | VU | | |
| 168 | 230 | Square-tailed Kite | *Lophoictinia isura* | VU | | |
| 173 | 226 | White-bellied Sea-Eagle | *Haliaeetus leucogaster* | | C | |
| 190 | 177 | Brolga | *Grus rubicunda* | VU | | |
| 219 | 168 | Latham's Snipe | *Gallinago hardwickii* | | J, C | IBA |
| 222 | 152 | Black-tailed Godwit | *Limosa limosa* | VU | J, C | |
| 224 | 153 | Bar-tailed Godwit | *Limosa lapponica* | | J, C | |
| 225 | 151 | Little Curlew | *Numenius minutus* | | J, C | |
| 226 | 150 | Whimbrel | *Numenius phaeopus* | | J, C | |
| 227 | 149 | Eastern Curlew | *Numenius madagascariensis* | | J, C | IBA |
| 231 | 159 | Marsh Sandpiper | *Tringa stagnatilis* | | J, C | |
| 232 | 158 | Common Greenshank | *Tringa nebularia* | | J, C | |
| 234 | 154 | Wood Sandpiper | *Tringa glareola* | | J, C | |
| 235 | 160 | Terek Sandpiper | *Xenus cinereus* | VU | J, C | |
| 236 | 157 | Common Sandpiper | *Actitis hypoleucos* | | J, C | |
| 237 | 155 | Grey-tailed Tattler | *Heteroscelus brevipes* | | J, C | |
| 238 | 156 | Wandering Tattler | *Heteroscelus incanus* | | J, C | |
| 239 | 129 | Ruddy Turnstone | *Arenaria interpres* | | J, C | |
| 240 | 939 | Asian Dowitcher | *Limnodromus semipalmatus* | | C | vagrant |
| 242 | 165 | Great Knot | *Calidris tenuirostris* | VU | J, C | |
| 243 | 164 | Red Knot | *Calidris canutus* | | J, C | |
| 244 | 166 | Sanderling | *Calidris alba* | VU | J, C | |
| 246 | 162 | Red-necked Stint | *Calidris ruficollis* | | J, C | |
| 247 | 965 | Long-toed Stint | *Calidris subminuta* | | J, C | |
| 250 | 978 | Pectoral Sandpiper | *Calidris melanotos* | | J | |
| 251 | 163 | Sharp-tailed Sandpiper | *Calidris acuminata* | | J, C | IBA |
| 253 | 161 | Curlew Sandpiper | *Calidris ferruginea* | | J, C | |
| 255 | 887 | Buff-breasted Sandpiper | *Tryngites subruficollis* | | J | vagrant |
| 256 | 167 | Broad-billed Sandpiper | *Limicola falcinellus* | VU | J, C | |
| 257 | 934 | Ruff | *Philomachus pugnax* | | J, C | |

**Table 3.0 - Significant Species (continued)**

| Tax order | Spp # | Common_name | *Scientific name* | NSW listing | CAMBA JAMBA | Notes |
|---|---|---|---|---|---|---|
| 261 | 170 | Painted Snipe | *Rostratula benghalensis* | VU | C | |
| 262 | 171 | Comb-crested Jacana | *Irediparra gallinacea* | VU | | |
| 265 | 174 | Bush Stone-curlew | *Burhinus grallarius* | EN | | |
| 266 | 175 | Beach Stone-curlew | *Esacus neglectus* | EN | | |
| 268 | 130 | Pied Oystercatcher | *Haematopus longirostris* | VU | | |
| 269 | 131 | Sooty Oystercatcher | *Haematopus fuliginosus* | VU | | |
| 272 | 148 | Red-necked Avocet | *Recurvirostra novaehollandiae* | | | IBA |
| 273 | 8006 | Pacific Golden Plover | *Pluvialis fulva* | | J, C | |
| 274 | 136 | Grey Plover | *Pluvialis squatarola* | | J, C | |
| 279 | 140 | Double-banded Plover | *Charadrius bicinctus* | | | NZ migrant |
| 280 | 139 | Lesser Sand Plover | *Charadrius mongolus* | VU | J, C | |
| 281 | 141 | Greater Sand Plover | *Charadrius leschenaultii* | VU | J, C | |
| 306 | 112 | Caspian Tern | *Sterna caspia* | | C | |
| 308 | 115 | Crested Tern | *Sterna bergii* | | J | |
| 312 | 953 | Common Tern | *Sterna hirundo* | | J, C | |
| 315 | 117 | Little Tern | *Sterna albifrons* | EN | J, C | |
| 320 | 109 | White-winged Black Tern | *Chlidonias leucopterus* | | J, C | |
| 422 | 248 | Powerful Owl | *Ninox strenua* | VU | | |
| 424 | 246 | Barking Owl | *Ninox connivens* | VU | | |
| 430 | 250 | Masked Owl | *Tyto novaehollandiae* | VU | | |
| 432 | 252 | Grass Owl | *Tyto capensis* | VU | | |
| 731 | 877 | Yellow Wagtail | *Motacilla flava* | | J, C | |

| | |
|---|---|
| Tax order | Taxonomic order following Christidis and Boles 1994. |
| Spp # | Identification number assigned to each species under the Australian Bird and Bat Banding Scheme. |
| VU | Vulnerable |
| EN | Endangered |
| C | CAMBA |
| J | JAMBA |
| IBA | Important Bird Area |

## 3.1 WILDFOWL

### 3.1.1 Magpie Goose

Magpie Geese were locally extinct in the Hunter Estuary until the 1970s. Since then they have expanded their range throughout the estuary. Magpie Geese are fed during the day at the Hunter Wetlands Centre where most of the birds roost. As Magpie Geese are largely nocturnal foragers their natural feeding areas away from the Hunter Wetlands Centre have not been ascertained. They have been observed to fly towards Ash Island at dusk (Maddock 2003a) and have been observed flying into Blue-billed Duck Pond (L. Crawford and C. Herbert pers. comm.).

*Recorded at:*

Antennae Wetland
Ash Island
Blue-billed Duck Pond (25)
Hexham Swamp
Hunter Wetlands Centre (93)
Market Swamp
Newcastle Wetlands Reserve
Newcastle University Wetland
Pambalong Nature Reserve (20)
Seaham Swamp Nature Reserve (40)
Tomago Wetland
Warabrook Wetland
Woodberry Swamp (7)

*Status:* Resident, breeding. Listed as *vulnerable* on the TSC Act. Numbers have increased, since their introduction to the Hunter Wetlands Centre, to a recorded maximum of 93. They have been reported to breed at the Hunter Wetlands Centre, Newcastle Wetlands Reserve, Market Swamp, Newcastle University Wetland, Antennae Wetland, Pambalong Nature Reserve, Swan Pond and Seaham Swamp Nature Reserve.

Magpie Geese were regarded as historically extinct until the 1970s when the first reappearance was reported from the Maitland area by Athel D'Ombrain in the Newcastle Herald (1978, 1980). They reappeared at Seaham Swamp in 1984 and nested successfully in 1987. Four adults with one juvenile, recorded by Maddock (1986) in January at the Hunter Wetlands Centre, were thought to have bred in the adjacent Hexham Swamp. During the period 1987 to 1990 juveniles from Serendip Research Station in Victoria and goslings from Darwin were released at the Hunter Wetlands Centre (the above information supplied by Maddock 2003a & pers. comm.).

### 3.1.2 Blue-billed Duck

Small numbers of Blue-billed Ducks are occasionally observed in the estuary. They are listed as *vulnerable* on the TSC Act.

*Recorded at:*

Blue-billed Duck Pond (2)
Deep Pond (4)
Hunter Wetlands Centre
Lenaghans Wetland (1)
Market Swamp
Newcastle Wetlands Reserve and Golf Course Dam
Warabrook Wetland (1)

*Status:* Although listed in the HBOC Annual Bird Report as *Accidental* (recorded less than once a year on a 10-year average) it should now be elevated to *Rare* (recorded only a few times a year).

### 3.1.3 Freckled Duck

Small numbers of the *vulnerable* Freckled Duck have been recorded at many locations throughout the Hunter Estuary.

*Recorded at:*

Ash Island (3)
Deep Pond (6)
Hunter Wetlands Centre (73)
Lenaghans Wetland (8)
Market Swamp (1)
Newcastle Wetlands Reserve (5), several sightings in 2001-02; (73 in 1983 on Golf Course Dam)
Pambalong Nature Reserve (1)
Tarro (3)
Warabrook Wetland (6)

*Status:* Rare. Not known to breed in the Hunter Estuary.

### 3.1.4 Cotton Pygmy Goose

A female Cotton Pygmy Goose was recorded only once in the Hunter Estuary at the Minmi Sewage Treatment Works, Tank Paddock, from 3 to 21 July 2002.

*Status:* Accidental.

### 3.1.5 Northern Shoveler

An adult male Northern Shoveler was observed at Teal Waters, Ash Island, and Deep Pond, in the industrial area of Kooragang Island, from 28 July to 1 August 2002. This is an extremely rare vagrant bird for Australia, let alone the Hunter Region. This is the fifth sighting for Australia.

*Status:* Accidental.

### 3.1.6 Chestnut Teal

Chestnut Teal are widespread and, sometimes, in large numbers in most freshwater and saltwater wetlands throughout the Hunter Estuary. The large number of Chestnut Teal present in the estuary, often more than 1% of the global population, contributes to the nomination of the Hunter Estuary as an "Important Bird Area".

*Recorded at:*

Ash Island (1,500+)
Bedminster Swamp (40)
BHP Moat (30)
Big Pond (100)
Deep Pond (1,010)
Fern Bay (15)
Fish Fry Flats (53)
Fullerton Cove (1,325), includes Grey Teal, all foraging
Hexham Swamp (600+)
Hunter Wetlands Centre (100-200)
Irrawang Swamp (140)
Kooragang Dyke Ponds (107)
Lenaghans Wetland (100+)
Long Pond (54)
Market Swamp
Melaleuca Swale (70)
Milhams Pond (53)
Newcastle University Wetland (6)
Newcastle Wetlands Reserve (50-100)
Newline Road Swamp (34)
Pambalong Nature Reserve (300)
Phoenix Flats (3)
Ross Wallbridge Reserve (1-5)
Sharpies Flat (8)
Stockton Sandspit (48)
Swan Pond (1,128)
Tank Paddock (60)
Tarro Swamp (50)
Teal Waters (300-400)
Wader Pond (250)
Warabrook Wetland (100+)
Woodberry Swamp (300)

*Status:* Common resident, breeding. Breeding recorded at Hunter Wetlands Centre, Market Swamp, Warabrook Wetland, Irrawang Swamp and Pambalong Nature Reserve. Probably breeding at many other locations throughout the estuary, but generally not reported as it is such a common species. Apart from sporadic irruptions numbers appear to have been steady from the end of 2000 to the present (**Figure 3.1.6**). However, there is a marked seasonal variation with greater numbers present during summer and autumn reducing to low numbers during winter and spring. Fewer locations were monitored when the shorebird counts were commencing resulting in lower numbers recorded during 1999.

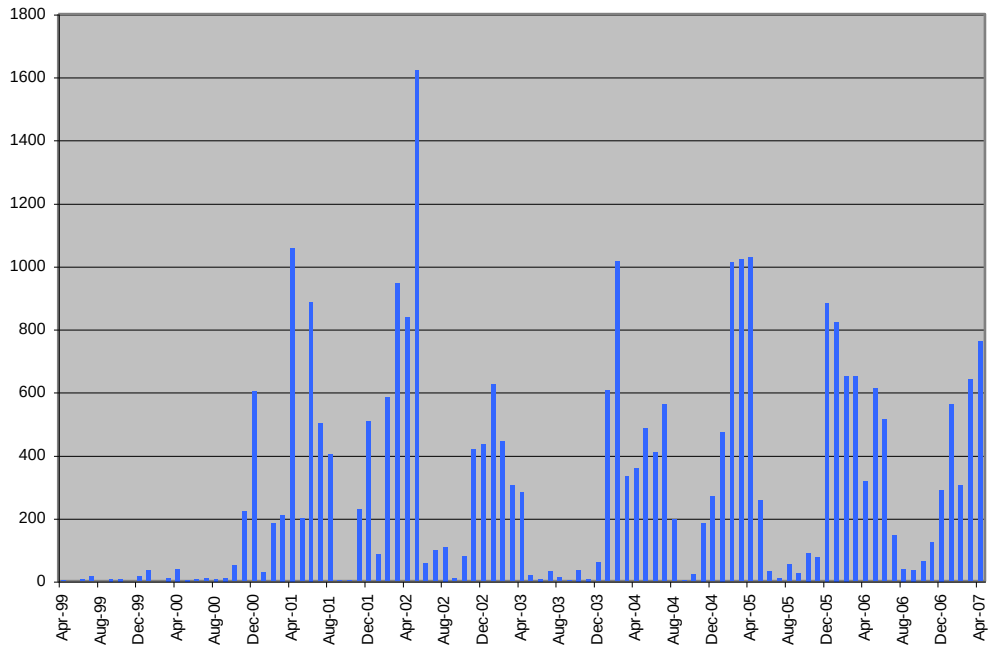



**Figure 3.1.6.** Chestnut Teal total for all locations monitored by HBOC's monthly shorebird counts. 1999 to 2007.

## 3.2 HERONS, EGRETS, BITTERNS AND IBIS

### 3.2.1 Great Egret

Great Egrets are widespread throughout the estuary, but when foraging are usually solitary and, therefore, seen in low numbers at any one location. As many as 20 have been observed at the Hunter Wetlands Centre. They occur at all wetlands except those with deep, reed-fringed margins (e.g. Blue-billed Duck Pond). However, they are colonial when breeding.

*Status:* Usual summer resident, breeding. The most significant egret rookery is located at the Hunter Wetlands Centre where as many as 198 nests were recorded in 1988/89 (**Figure 3.2.1a**). Since then the number of nests has declined considerably to only 15 nests. Very minor nesting has been recorded at Seaham Swamp Nature Reserve where 3 nests were recorded in 1988/89 and 4 in 1989/90, but none since. Breeding Great Egrets appear to have been in steep decline since 1989, perhaps due to drier than average conditions throughout the Hunter Region. This strong decreasing trend in the number of breeding Great Egrets is not apparent in the total number of Great Egrets *foraging* in the main saltwater parts of the estuary (**Figure 3.2.1b**). In fact, there is a very slight increasing trend although this trend is too slight to draw definite conclusions. This apparent paradox may be caused by the phenomenon that local egrets migrate away from their breeding area during winter, but are replaced by egrets migrating from more northerly areas (Geering et. al. 1998, Maddock 2003b).

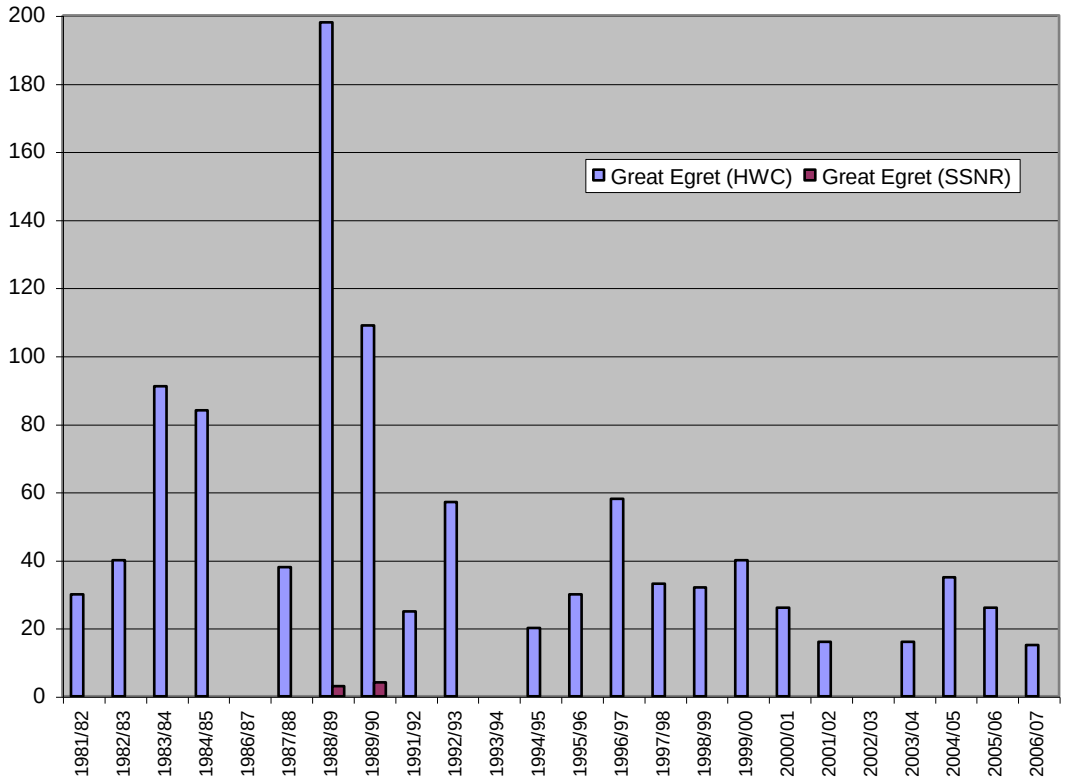



**Figure 3.2.1a.** Great Egret nests at the Hunter Wetlands Centre (HWC) and Seaham Swamp Nature Reserve (SSNR) (Max Maddock)

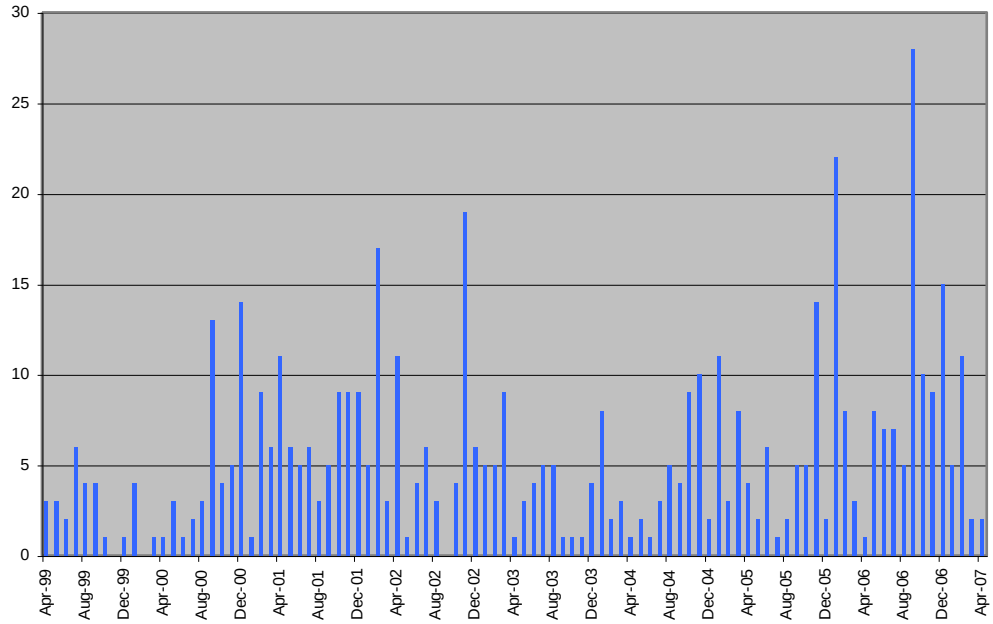



**Figure 3.2.1b.** Great Egret total for all locations monitored by HBOC's monthly shorebird counts, 1999 to 2007.

### 3.2.2 Cattle Egret

Cattle Egrets forage in small flocks on grassy paddocks on the estuarine floodplain, usually associated with grazing cattle and horses. However, they congregate to breed in large colonial rookeries. Almost 2,000 nests were recorded in the Hunter Estuary during the 1987/88 breeding season (**Figure 3.2.2a**). However, the number of nests has declined to just over 400 during the 2006/07 season. The largest rookery, with as many as 1,393 nests, was located at the Hunter Wetlands Centre until 1992. Since then numbers have declined and the largest rookery is now located at Seaham Swamp Nature Reserve. As many as 700 nests were recorded at Seaham Swamp Nature Reserve during 1991/92 (**Figure 3.2.2b**) (Maddock 2007), but since then the number of nests has decreased to only 234 in 2006/07. The Hunter Wetlands Centre is now the second most important rookery in the estuary with 190 nests recorded during the 2006/07 breeding season.

"During winter Cattle Egrets, nesting at the Hunter Wetlands Centre and Seaham Swamp, have been found to migrate to all points of the compass, but most move southwards along the coastal region. They winter at various places in southern NSW, Victoria, South Australia, Tasmania and its islands. Some Hunter Wetlands Centre egrets have even been recorded wintering in New Zealand, one for two years in a row. They travel in stages, spending up to a few days at each staging location and tend to winter in the same places each year, even in the same paddocks. Tagged birds have been recorded at the same locations for up to 5 successive years. In spring the vast majority return to their natal colony to nest. Most live for about 3 years, but some have been recorded returning for 4-9 years." (Max Maddock pers. comm., also see Maddock 2003b & in prep.)

*Status:* Summer resident, breeding. During winter local egrets migrate away from their breeding area, but are replaced by egrets migrating from more northerly areas (Maddock & Geering 1994, Maddock 2003b). From a maximum of 1,950 nests recorded in the Hunter Estuary during the 1988/89 breeding season the number has fallen to only 424 nests during the 2006/07 breeding season (**Figure 3.2.2a**).

Max Maddock (pers. comm. 2007) offers some thoughts regarding the drop-off in nesting … "The shift in numbers from the Hunter Wetlands Centre to Seaham Swamp Nature Reserve is interesting, particularly because in 1991-1992 (a big drought year), Seaham Swamp nesting started much earlier; the colony filled quickly and several tagged Seaham Swamp egrets moved to the Hunter Wetlands Centre and nested. It is a challenge to come up with an explanation why Seaham Swamp remained "popular" as a nesting venue, while the Hunter Wetlands Centre lost favour. It does not necessarily mean that Hunter Wetlands Centre egrets moved site, particularly as most Cattle Egrets have died by about 3 years of age – very few tagged breeders have returned to nest as 4, 5, 6, 7, 8 or 9 year old birds. The decline in Cattle Egret numbers in both colonies is more a reflection of habitat degradation on their migration routes – they have been in decline even in New Zealand over recent years."

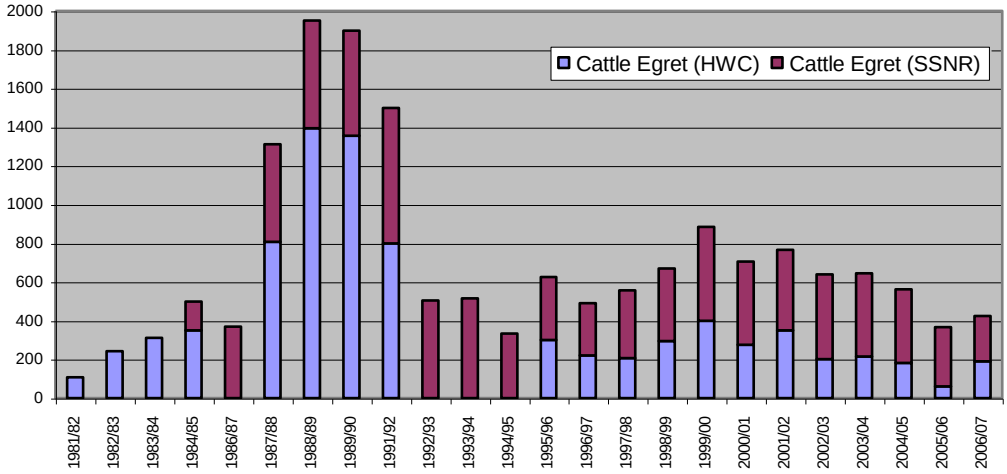



**Figure 3.2.2a.** Total Cattle Egret nests at the Hunter Wetlands Centre and Seaham Swamp Nature Reserve (from Max Maddock).

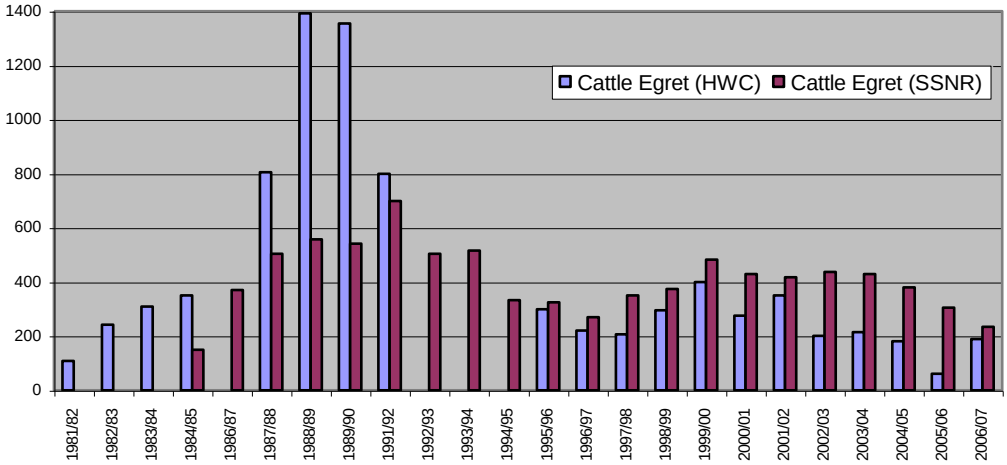



**Figure 3.2.2b.** Cattle Egret nests at the Hunter Wetlands Centre compared with Seaham Swamp Nature Reserve (from Max Maddock).

### 3.2.3 Black Bittern

This secretive species is not often seen in the estuary and when seen, is usually recorded as a single bird. It has been observed only on Ash Island (1) and at Newcastle University Wetland (1).

*Status:* Rare resident (possibly overlooked). No reports of breeding, but highly probable that it does breed in the estuary.

### 3.2.4 Australasian Bittern

Australasian Bitterns, although very large birds, are solitary and cryptic, hence rarely observed. However, there is sufficient habitat in the Hunter Estuary to support a significant population. Sightings are uncommon and are usually of single birds (**Appendix 5**). Most sightings of Australasian Bitterns have been recorded from Hexham Swamp and associated wetlands, Ash Island and Kooragang Island. Wetlands where bitterns have not been observed but where suitable bittern habitat exists include Seaham Swamp Nature Reserve, Irrawang Swamp, Newline Road Swamp, Pambalong Nature Reserve, Lenaghans Wetland, Market Swamp, Antennae Wetland and Woodberry Swamp.

*Recorded at:*

BHP Moat (1)
Big Pond (1)
Hexham Swamp (6)
Hunter Wetlands Centre (1)
Juncus Swamp (5)
Newcastle University Wetland (1)
Newcastle Wetlands Reserve (1)
Swan Pond, recorded in adjacent areas to northeast, Bittern Corner (1), and northwest, Typha Swamp (1) (**Figure 2.4.6**)
Wader Pond (1)
Tank Paddock (1)
Tomago Wetlands (1)

*Status:* Resident (recorded all months). It is listed as *vulnerable* on Schedule 2 of the NSW *Threatened Species Conservation Act* 1995. Its global conservation status is listed as 'Critically Endangered' by the Heron Specialist Group of Wetlands International. Although not recorded as breeding in the Hunter it is almost certain that Australasian Bitterns would be breeding because of the extensive habitat available. Recent human modifications to the estuary have tended to increase the potential habitat for bitterns by restricting tidal inundation of areas such as Hexham Swamp and Tomago Wetlands, greatly increasing the area of *Phragmites* and *Typha* freshwater swamps. Thus, although the population trend for Australasian Bittern is decreasing Australia-wide, there has been a slightly increased frequency of bittern observations locally. However, the future re-introduction of tidal inundations to Hexham Swamp and Tomago Wetlands may have a detrimental effect on the local bittern population. In truth, little is known about the Hunter Estuary population of Australasian Bittern (SWC Consultancy 2002).

### 3.2.5 Glossy Ibis

Glossy Ibis occur sporadically, mostly on estuarine plain freshwater swamps in small to moderately large numbers.

*Recorded at:*

Ash Island (100-150)
Bedminster Swamp (1-5)
Hexham Swamp (75)
Hunter Wetlands Centre (40)
Irrawang Swamp (50+)
Lenaghans Wetland (100+)
Newline Road Swamp (1-5)
Pambalong Nature Reserve (71)
Seaham Swamp Nature Reserve (1-5)
Stockton Sandspit (6)
Tarro Swamp (20)
Water Ribbon Swale (30)
Woodberry Swamp (23)

*Status:* Bird of passage. Not known to breed in the estuary. Occurrence and numbers vary according to local and regional conditions.

### 3.2.6 Australian White Ibis

Australian White Ibis are common to abundant at many locations as they forage throughout the estuary during daylight hours. However, birds return from their daily foraging within the estuary and on the extensive surrounding flood plains, to congregate in large numbers at only a few nocturnal roost sites. At these times they can be one of the most abundant bird species in the estuary (together with Straw-necked Ibis and Red-necked Avocet). Semi-regular counts co-ordinated by Max Maddock have been carried out since the 1980s.

*Main nocturnal roosts located at:*

Fern Bay (500+)
Hunter Wetlands Centre (2,848) (**Figure 3.2.6a**)
Irrawang Swamp (13,509, combined total White Ibis and Straw-necked Ibis) (**Figures 3.2.7d** and **3.2.7e**)
Market Swamp (278) (**Figure 3.2.6a**)
Newcastle Wetlands Reserve (92) (**Figure 3.2.6a**)
Tarro Swamp (66) (**Figure 3.2.7c**)
Tomago Ibis Roost (976) (**Figure 3.2.7b**)

*Status:* Migratory, but some recently breeding and, therefore, resident. White Ibis normally migrate to inland wetlands to breed in spring and early summer. However, they began breeding at the Hunter Wetlands Centre during the 2003/04 season with one nest, then four nests during the 2004/05 season, increasing to 14 nests during 2005/06 and then 55 during 2006/07. Evidence for migration was first discussed by Gosper (1981).

Maddock (2007) writes:
"Although White Ibis are present in the Hunter all year round, the numbers have increased in autumn-winter in company with the influx of Straw-necked Ibis migrating from the inland breeding areas. Hundreds of White Ibis scavenge for food at the local waste dumps and consequently have an ample food supply all year round, even in drought periods. It is possible that the population is growing because of fewer [birds] returning inland due to the desperate water situation there that has prevented nesting for 7 years. It will be important to closely monitor future ibis nesting at Shortland [Hunter Wetlands Centre] to assess whether there will be any negative impacts on the nesting of the egrets due to increasing competition for nest sites.

"Ibis have nested in association with egrets for many years at both the very large inland and other smaller coastal colonies without any apparent negative effects. However, the possibility of a future ibis population explosion causing problems at the [Hunter Wetlands Centre] colony cannot be completely discounted."

Although there is a seasonal autumn to winter increase in the number of White Ibis (**Figures 3.2.6a** and **3.2.7b**) there appears to be a relatively stable or very slightly declining population in the main saltwater part of the estuary (**Figure 3.2.6b**) and a decline in the overall numbers of Straw-necked and White Ibis over the last few years at Irrawang Swamp roost (**Figure 3.2.7e**).

Prior to 2006, White Ibis were considered to be present in numbers of International Importance (i.e. greater than 1% of the global population – 800). However, from 2006 the 1% number has been revised upwards to 10,000 and it is doubtful that Australian White Ibis now fulfil that criteria.

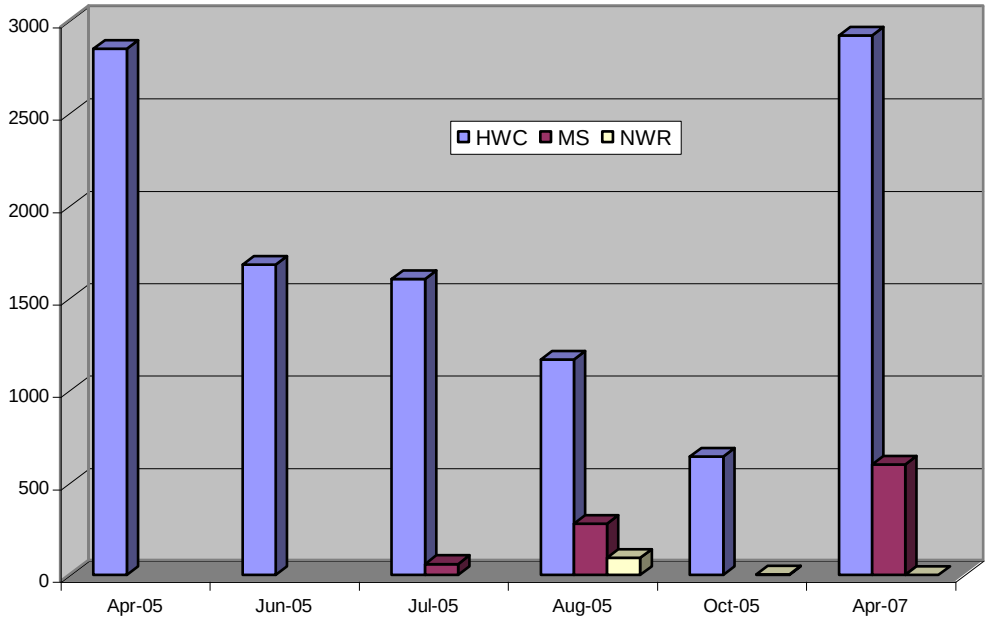



**Figure 3.2.6a.** Australian White Ibis at the Hunter Wetlands Centre (HWC), Market Swamp (MS) and Newcastle Wetlands Reserve (NWR).

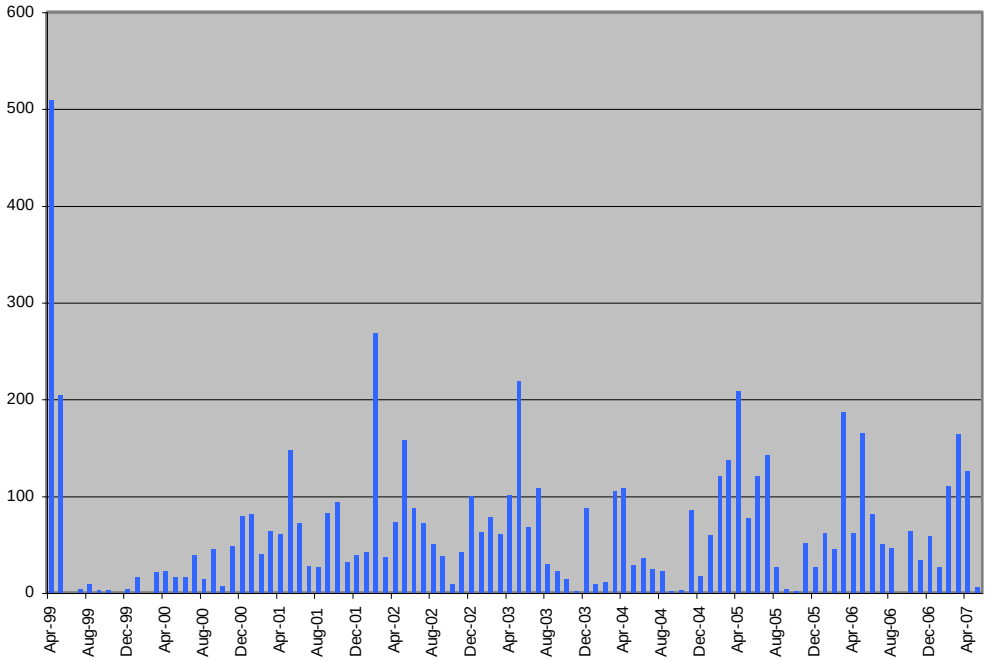



**Figure 3.2.6b.** Australian White Ibis totals for all locations monitored by HBOC's monthly shorebird counts, 1999 to 2007.

### 3.2.7 Straw-necked Ibis

Straw-necked Ibis forage mostly in grassy paddocks on the estuarine floodplain, often in large aggregations. Towards evening they fly in v-formation flocks to nocturnal roosts.

*Main nocturnal roosts are located at:*

Hunter Wetlands Centre (11,856) (**Figure 3.2.7a**)
Irrawang Swamp (13,509 total White Ibis and Straw-necked Ibis) (**Figures 3.2.7d** and **3.2.7e**)
Market Swamp (1,545) (**Figure 3.2.7a**)
Newcastle Wetlands Reserve (20) (**Figure 3.2.7a**)
Tarro Swamp (669) (**Figure 3.2.7c**)
Tomago Ibis Roost (194) (**Figure 3.2.7b**)

*Status:* Migratory, non-breeding. Straw-necked Ibis migrate during late winter and spring to nest at inland wetlands such as the Macquarie Marshes and the Gwydir Wetlands. Migration was first discussed by Gosper (1981).

Prior to 2006, Straw-necked Ibis were considered to be regularly present in numbers of International Importance (i.e. greater than 1% of the global population – 5,000). Even though the 1% number has now been revised upwards to 10,000 and it is probable that Straw-necked Ibis still fulfil that criteria in the Hunter Estuary. Stuart (1994-2006) stated that in 2005 … "probably 25,000 birds were present at the peak of the migration".

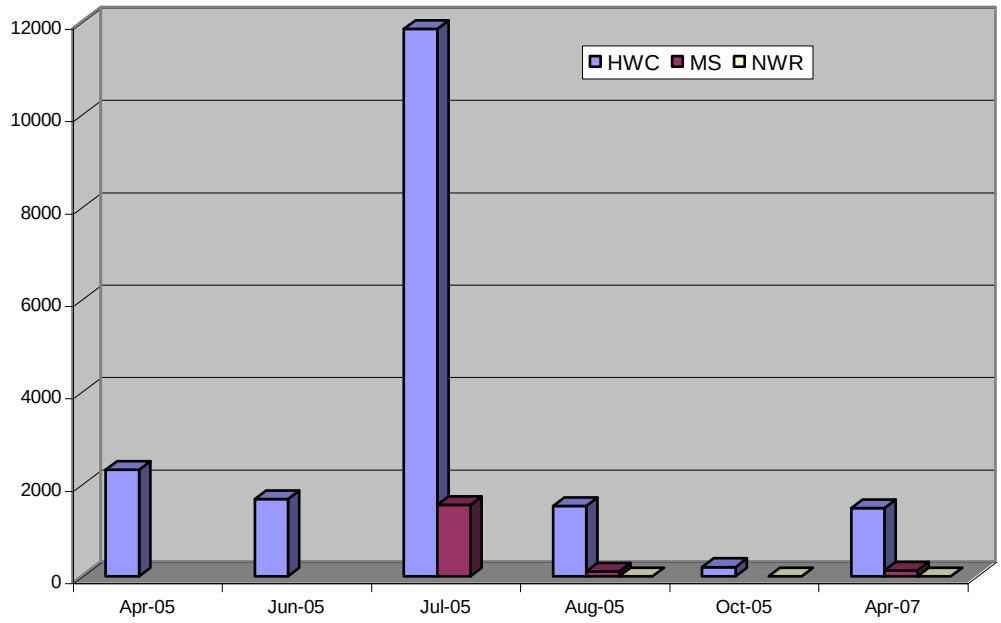



**Figure 3.2.7a.** Straw-necked Ibis at the Hunter Wetlands Centre (HWC), Market Swamp (MS) and Newcastle Wetlands Reserve (NWR), 2005 to 2007.

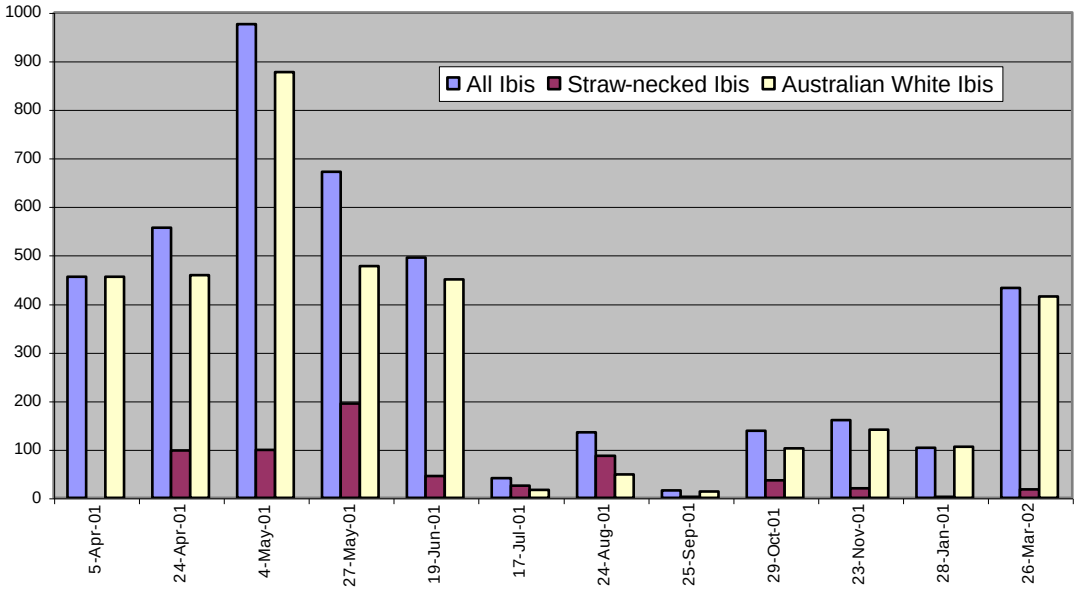



**Figure 3.2.7b.** Straw-necked Ibis and White Ibis at Tomago Ibis Roost, 2001 to 2002 (Greg Little and Max Maddock).

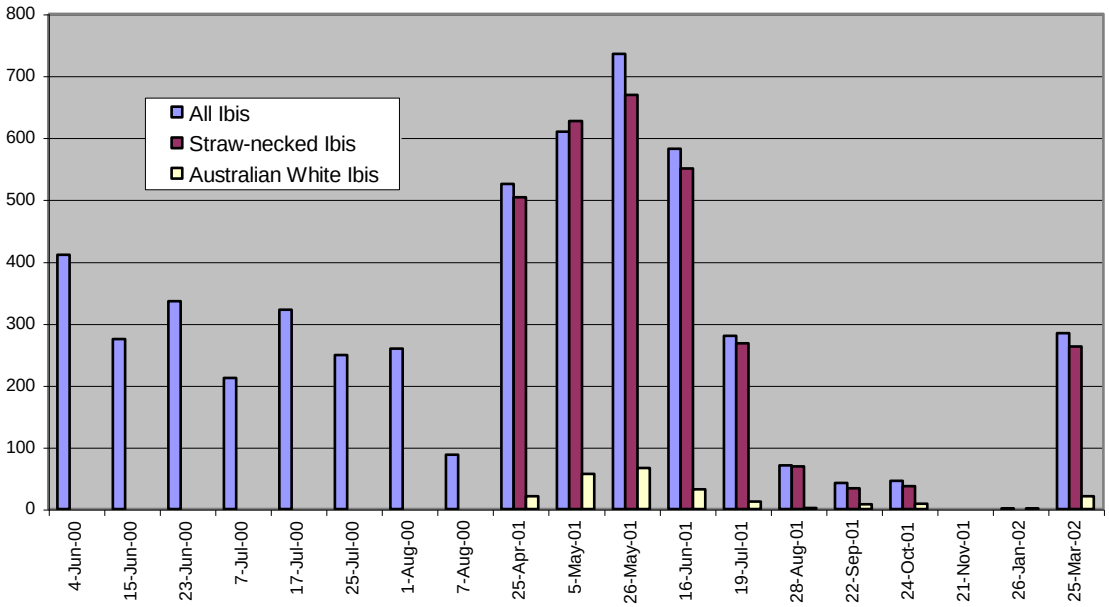



**Figure 3.2.7c.** Straw-necked Ibis and White Ibis at Tarro Swamp and Recreation Area, 2000 to 2002 (Max Maddock).

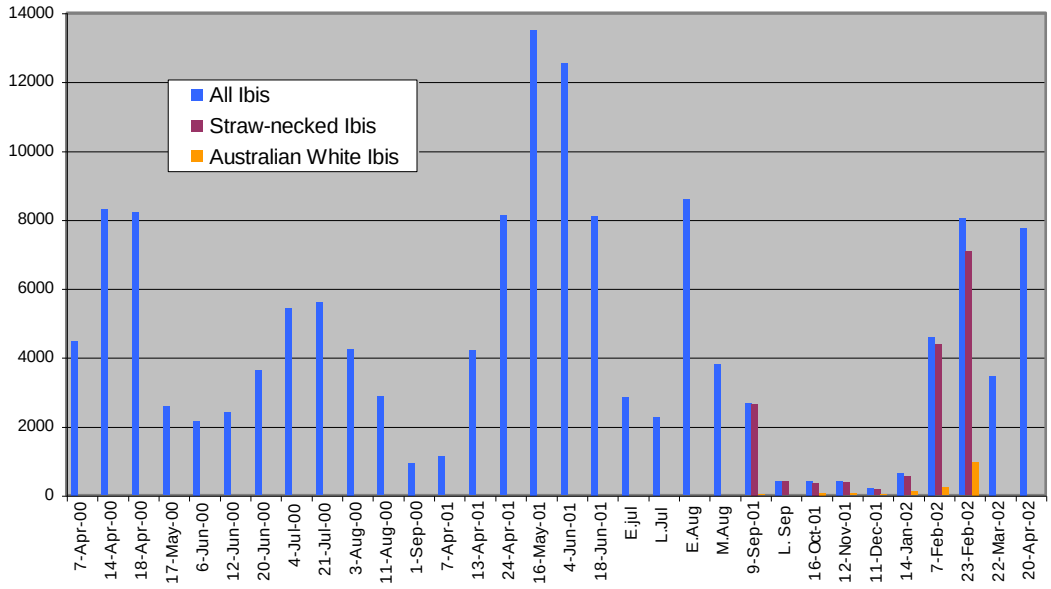



**Figure 3.2.7d.** Straw-necked Ibis and Australian White Ibis at Irrawang Swamp, April 2000 to April 2002 (Max Maddock).

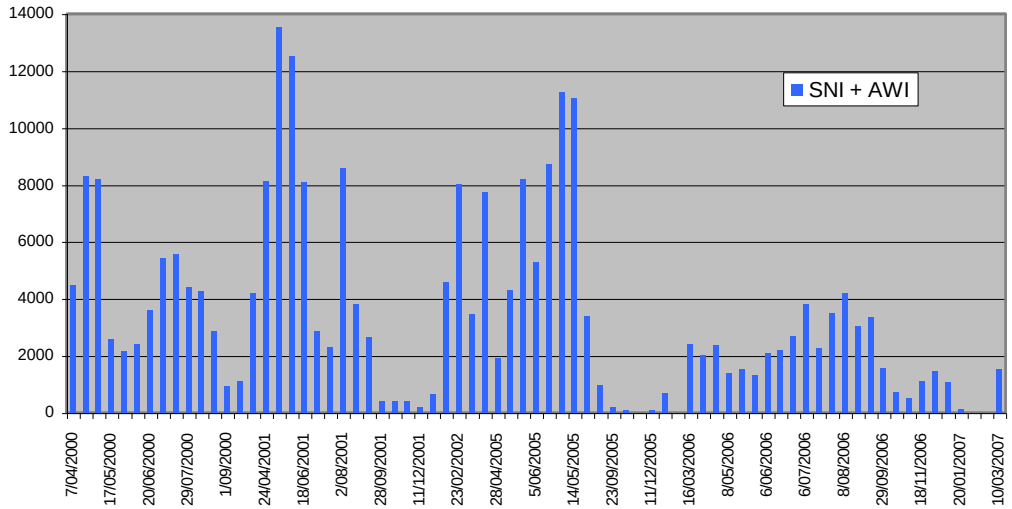



**Figure 3.2.7e.** Total of all Straw-necked Ibis and Australian White Ibis at Irrawang Swamp, April 2000 to March 2007 (Max Maddock).

## 3.3 STORKS

### 3.3.1 Black-necked Stork

The Black-necked Stork is occasionally observed at widespread locations throughout the Hunter Estuary, usually as a single bird, less often as a pair or as three or four birds, and only for short periods.

*Recorded at:*

Ash Island (4), i.e. Cobbans Overflow (2) and Tadpole Waters (2) (**Figure 2.4.6**)
Bedminster Swamp (2)
Deep Pond (1)
Grahamstown Dam (1)
Hexham Swamp (1)
Hunter Wetlands Centre (3)
Irrawang Swamp (3)
Lenaghans Wetland (2)
Milhams Pond (2)
Pambalong Nature Reserve (2)
Phoenix Flats (1)
Seaham Swamp (3)
Swan Pond (1) and adjacent area north of Bellfrog Track
Tomago Wetland (1).
Wader Pond (1)
Woodberry Swamp (3)

*Status:* Bird of passage. Listed as *endangered* on Schedule 2 of the NSW *Threatened Species Conservation Act* 1995. Known to breed in the Hunter Region, but not in the Hunter Estuary. It was suggested, in the HBOC Annual Bird Report for 2003, that 3 pairs may have been present in the Hunter Region during 2003, but only one pair was regularly reported from the Hunter Estuary. As the population of Black-necked Storks in New South Wales is estimated at only 35 to 43 birds (Maddock 2003a) Ash Island, at times, hosts 10% of the state's population.

## 3.4 RAPTORS

### 3.4.1 Osprey

Ospreys, although considered resident in the Hunter Region, are only occasionally recorded in the Hunter Estuary and over Ash Island as one to two birds. They are more often recorded from the northern coastal Hunter Region and around Lake Macquarie.

*Status:* Resident in Hunter Region, but should be considered as a Bird of Passage for the Hunter Estuary. Not known to have bred in the Hunter Estuary, but recorded nesting to the north at Port Stephens and to the south at Lake Macquarie (southernmost breeding site in NSW).

### 3.4.2 Square-tailed Kite

An uncommon bird. Most often seen singly or in pairs in the Maitland, Thornton, Bolwarra, and Woodberry area. Also seen occasionally at Raymond Terrace, Irrawang Swamp, Tarro Swamp, Newcastle University, Fullerton Cove, Grahamstown Dam and Shortland. It is not an estuary-dependant bird, and therefore, because it is seen accidentally over, or near wetlands, it is not generally included on the lists of Significant Species for particular wetlands.

*Status:* Uncommon Resident. Regularly observed in the Maitland to Raymond Terrace areas rather than the lower parts of the Hunter Estuary. Nests near Coopernook. Not recorded nesting in the Hunter Estuary. However, the regularity of sightings, sometimes with juveniles in the Maitland area, suggests that there may be an undiscovered nest-site in that vicinity.

### 3.4.3 White-bellied Sea-Eagle

White-bellied Sea-Eagles are one of the most commonly seen raptors in the lower Hunter Estuary. As many as ten birds have been observed at one location in the estuary, Deep Pond. Also, seven birds have been observed at Tomago Wetlands (probably adults with immature birds). However, there are probably many more in the total estuary area. They range throughout the entire estuary and well inland near waterways in the Hunter Region. White-bellied Sea-Eagles can be seen over-flying most wetlands throughout the estuary.

*Status:* Usual Resident. Reported nesting at Grahamstown Dam. Although nests have not been recorded in the lower part of the estuary, sea-eagles would almost certainly nest there. There has been a slight increase in the rate of recording since 1999 (**Figure 3.4.3**).

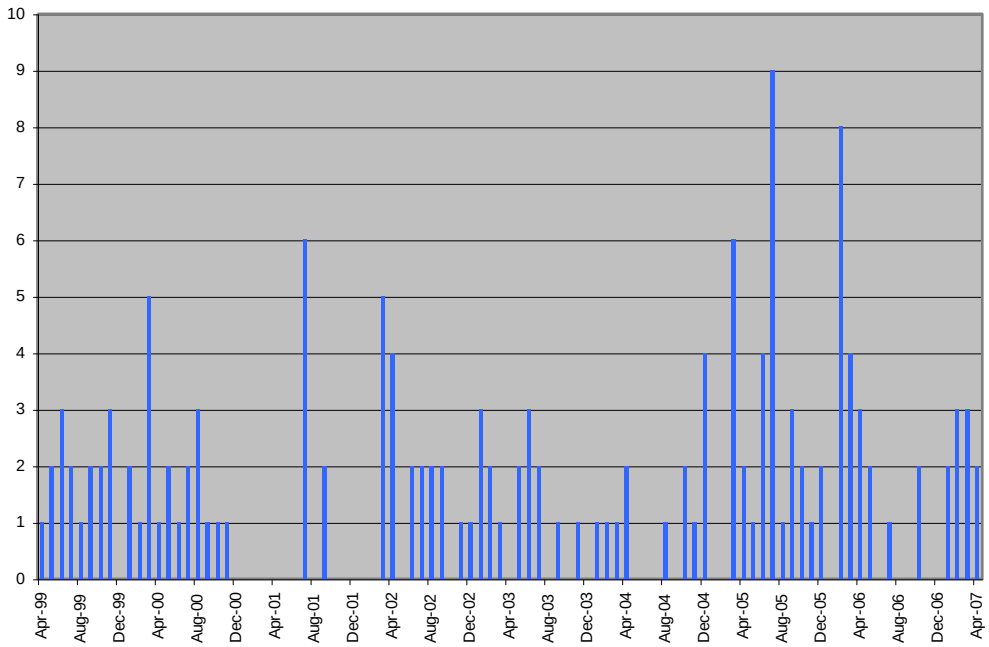



**Figure 3.4.3.** White-bellied Sea-Eagle totals for all locations monitored by HBOC's monthly shorebird counts, 1999 to 2007.

## 3.5 CRANES

### 3.5.1 Brolga

There has been only one HBOC 2005 record of a single Brolga in the lower Hunter Estuary at Morpeth, which is immediately west of the area discussed in this report.

*Status:* Accidental.

## 3.6 MIGRATORY SHOREBIRDS

Since April 1999, the Hunter Bird Observers Club has conducted monthly counts of shorebirds at locations throughout the lower part of the Hunter Estuary. In addition, other birds using these locations are also recorded. Locations monitored for HBOC's monthly shorebird counts include:

- Newcastle Harbour - Stony Point, since 2006 (**Section 2.1**)
- North Arm - Stockton Channel, Stockton Sandspit, Fern Bay, Kooragang Dykes, Fullerton Cove Beach (**Section 2.2**)
- Kooragang Industrial Area – Big Pond, Long Pond, BHP Moat, Deep Pond, Blue-billed Duck Pond (**Section 2.3**)
- Ash Island – Swan Pond, Wader Pond, Fish Fry Flats, Sharpies Flat, Teal Waters, Phoenix Flats, Milhams Pond, Melaleuca and Water Ribbon Swales, Scotts Point (**Section 2.4**)

In the following discussion, two types of graphs are shown for each species monitored during HBOC's monthly shorebird counts:

1. shorebird numbers at each locality and total numbers for the estuary for the period April 1999 to March 2007; and
2. the historical population trend for each species from 1970 to 2007.

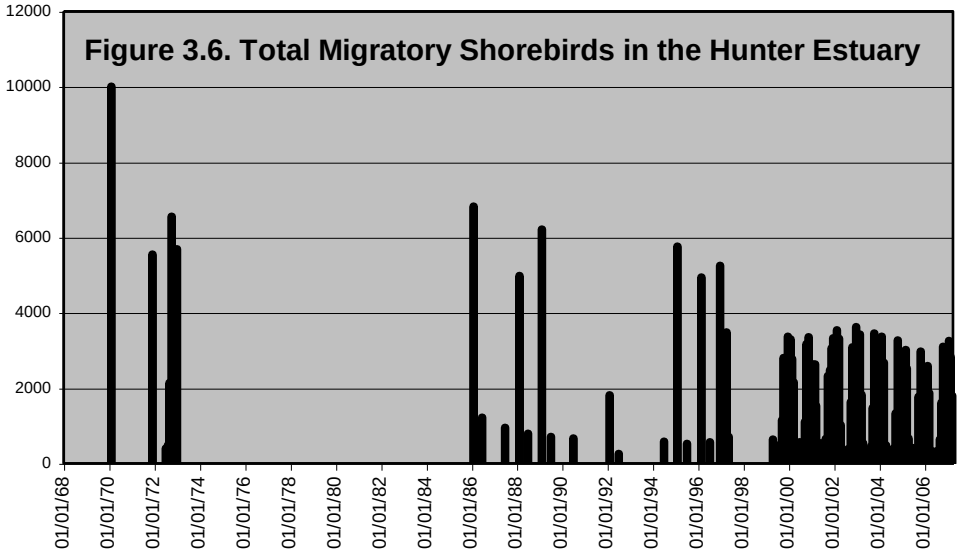
Data for shorebirds comes from:

1. HBOC's monthly shorebird counts (April 1999 to March 2007) (**Appendix 3**);
2. Hunter Region of New South Wales Annual Bird Reports 1-13 (for the years 1993 to 2005) (**Appendix 6**)
3. historical data summarised in Stuart (2002 and in prep.).

Data from HBOC's monthly shorebird counts at particular locations are shown as histogram graphs. Histograms showing total numbers of each shorebird species in the Hunter Estuary refer only to locations surveyed during the monthly counts. The graphs do not include data on shorebirds from peripheral swamps (discussed in **Sections 2.5** and **2.6**) as they are not included in the regular monthly surveys.

The maximum number of birds quoted for each species (listed in brackets after each location) is the highest number recorded or observed from all sources of data, and not necessarily from the monthly shorebird counts (i.e. in some cases, numbers in brackets will exceed the maximum numbers shown on the graphs of the monthly counts).

Anecdotal reports suggest that there may have been as many as 20,000 migratory shorebirds using the Hunter Estuary prior to the 1970s (Fred van Gessel pers. comm.). Published records, however, account for a total of only 10,000 birds during 1970 (**Figure 3.6**). It is evident that the number of migratory shorebirds in the Hunter Estuary has steadily and drastically declined from between 10,000 and 20,000 shorebirds prior to the 1970s to the present 3,500.



### 3.6.1 Latham's Snipe

Latham's Snipe are cryptic, secretive birds that can be easily overlooked but are often present in most of the freshwater wetlands throughout the Hunter Estuary from mid-August to April. At any one time there could be several hundred inhabiting the estuary. They are more often recorded at the most frequently visited wetlands although they can potentially occur anywhere there is suitable habitat consisting of coarse fringing wetland vegetation for roosting and muddy margins for foraging. Regular counts have been carried out at Pambalong Nature Reserve (475) and Irrawang Swamp (73). As many as 60 snipe were recorded in Market Swamp during 1993 and 20 in 1995. However, they have rarely been seen there since construction of access tracks associated with the railway altered the hydrology.

*Recorded at:*

Bedminster Swamp (1)
Deep Pond (1)
Grahamstown Dam (3)
Hexham Swamp (2)
Hunter Wetlands Centre (20)
Irrawang Swamp (73) (**Figure 3.6.1b**)
Lenaghans Wetland (30)
Market Swamp (60)
Milhams Pond (2)
Newcastle Wetlands Reserve (55)
Pambalong Nature Reserve (475) (**Figure 3.6.1a**)
Ross Wallbridge Reserve (2)
Seaham Swamp Nature Reserve (30+)
Tank Paddock (1)
Tarro Swamp (3)
Warabrook Wetland (2)

*Status:* Usual Summer Migrant. Breeds in Japan. Numbers fluctuate greatly depending on local conditions in the Hunter Estuary wetlands and northern hemisphere breeding success. Numbers drastically declined at Pambalong Nature Reserve from a maximum of 475 in 1997 down to seven in 2002 (falling by half each year) before recovering to a total of 98 in 2006 (**Figure 3.6.1a**). There have been fluctuating numbers at Irrawang Swamp since 1995 when monitoring commenced, but there has been a general decline to zero birds during early 2007 (**Figure 3.6.1b**).

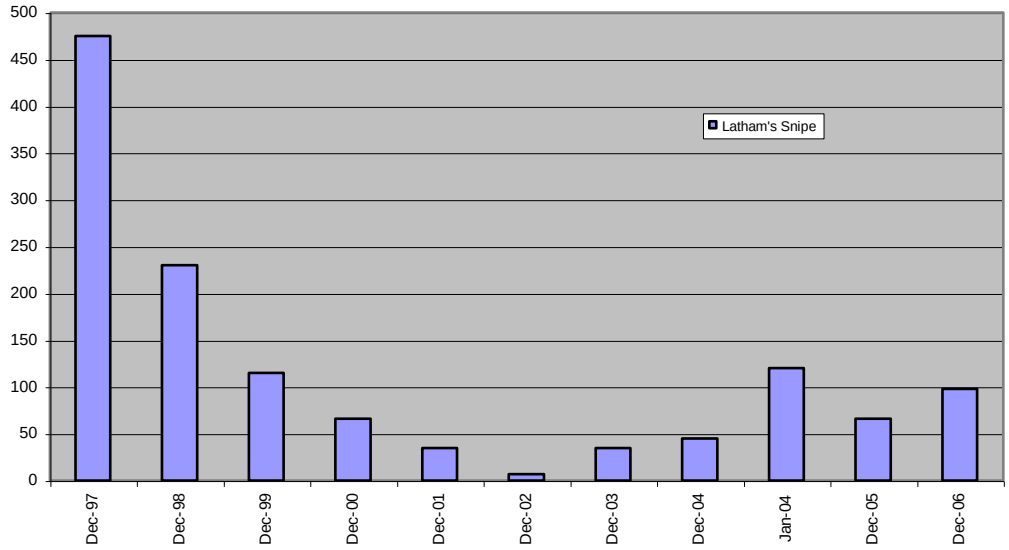



**Figure 3.6.1a.** HBOC's regular December Latham's Snipe count at Pambalong Nature Reserve, December 1997 to December 2006.

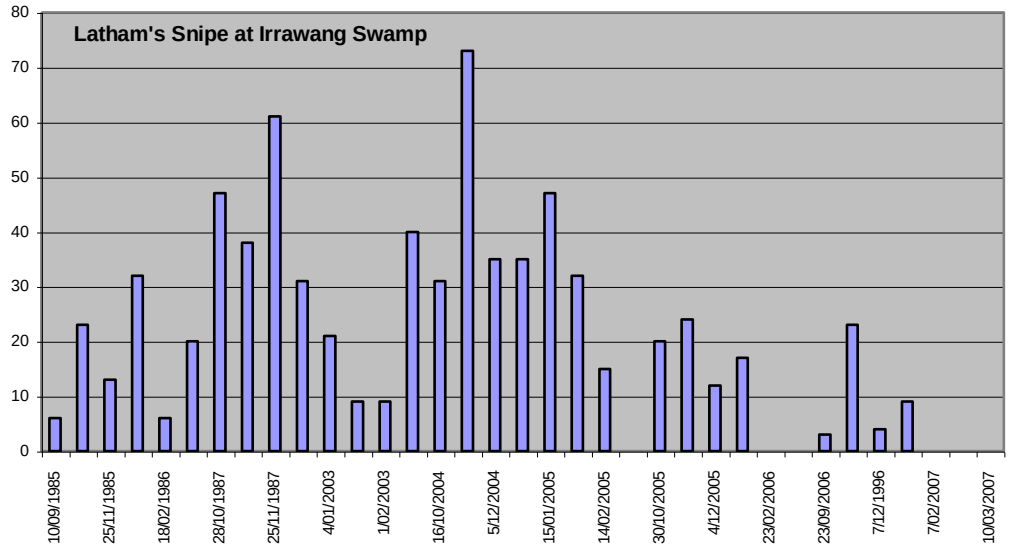



**Figure 3.6.1b.** Latham's Snipe at Irrawang Swamp (Max Maddock).

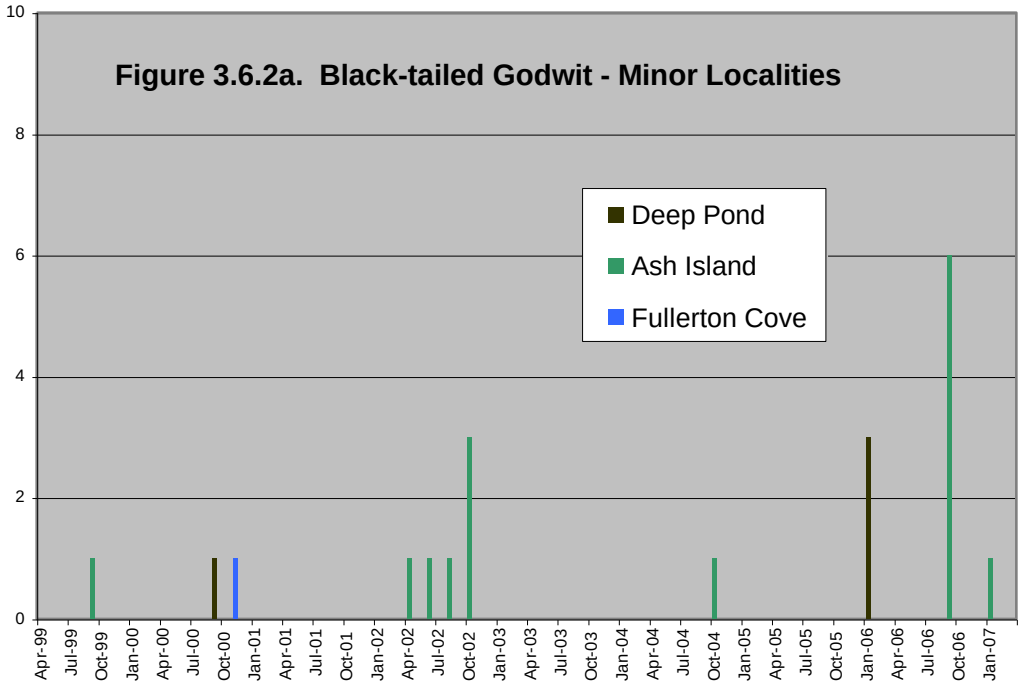
### 3.6.2 Black-tailed Godwit

Black-tailed Godwits confine their activities to the saline parts of the Hunter Estuary. They begin arriving in the Hunter Estuary during August, with the main influx in October, and then depart during the following April (**Figure 3.6.2d**). Up to 192 birds were present during the 2006/07 summer and up to three birds over-wintered during 2006. At present nearly all Black-tailed Godwits use the main daytime high tide roosts at the Kooragang Dykes and Stockton Sandspit. During the early 1990s, Fullerton Cove Beach was an important roost for Black-tailed Godwits, however, they have not been recorded at that site since monthly surveys commenced in April 1999. At night it is presumed that they use Windeyers Reach Nocturnal Roost. Black-tailed Godwits forage mainly at Fullerton Cove, Kooragang Dyke Ponds 2, 3 and 4, and Stockton Sandspit. A few birds have also been observed at Deep Pond, Swan Pond and Hexham Swamp.

*Recorded at:*

Deep Pond (3), foraging and loafing
Fish Fry Flats
Fullerton Cove, main foraging area
Fullerton Cove Beach (1), roosting
Hexham Swamp (2), foraging
Kooragang Dykes (364), roosting
Kooragang Dyke Ponds 2, 3 and 4, foraging and roosting
Stockton Sandspit (425), foraging and roosting
Swan Pond (6), loafing
Teal Waters, loafing
Windeyers Reach Nocturnal Roost

*Status:* Summer migrant. Breeds in the northern hemisphere. HBOC's monthly shorebird monitoring shows that maximum summer counts increased from 300 during1999/2000, to 425 by 2002/03, and have since decreased successively to less than 200 during 2006/07 (**Figure 3.6.2d**). Numbers of from 400 to 800 during the 1970s and 1980s have declined significantly to the present (**Figure 3.6.2e**).



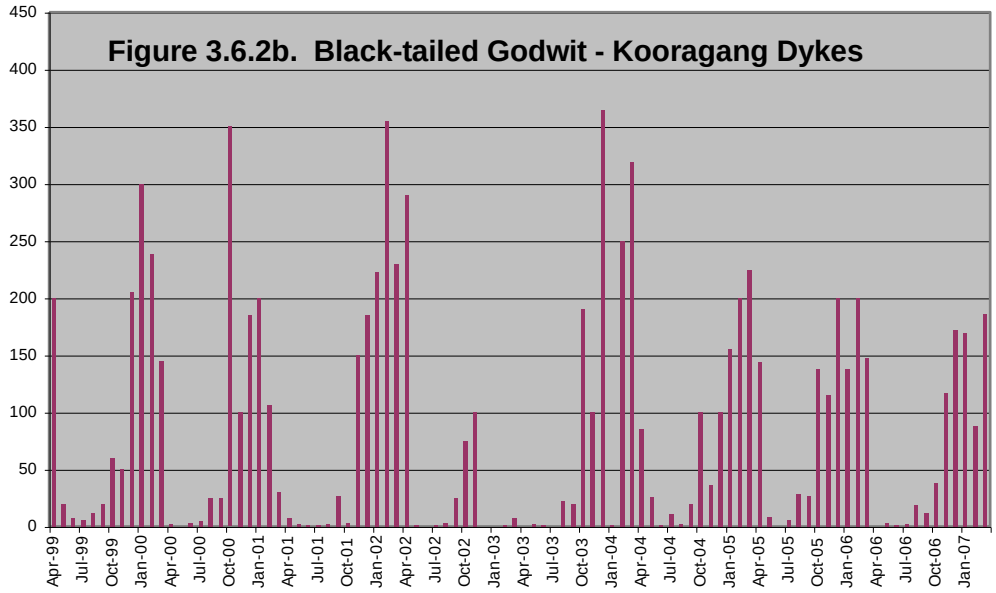


Figure 3.6.2b. Black-tailed Godwit - Kooragang Dykes
450
400
350
300
250
200
150
100
50
0
Apr-99
Jul-99
Oct-99
Jan-00
Apr-00
Jul-00
Oct-00
Jan-01
Apr-01
Jul-01
Oct-01
Jan-02
Apr-02
Jul-02
Oct-02
Jan-03
Apr-03
Jul-03
Oct-03
Jan-04
Apr-04
Jul-04
Oct-04
Jan-05
Apr-05
Jul-05
Oct-05
Jan-06
Apr-06
Jul-06
Oct-06
Jan-07

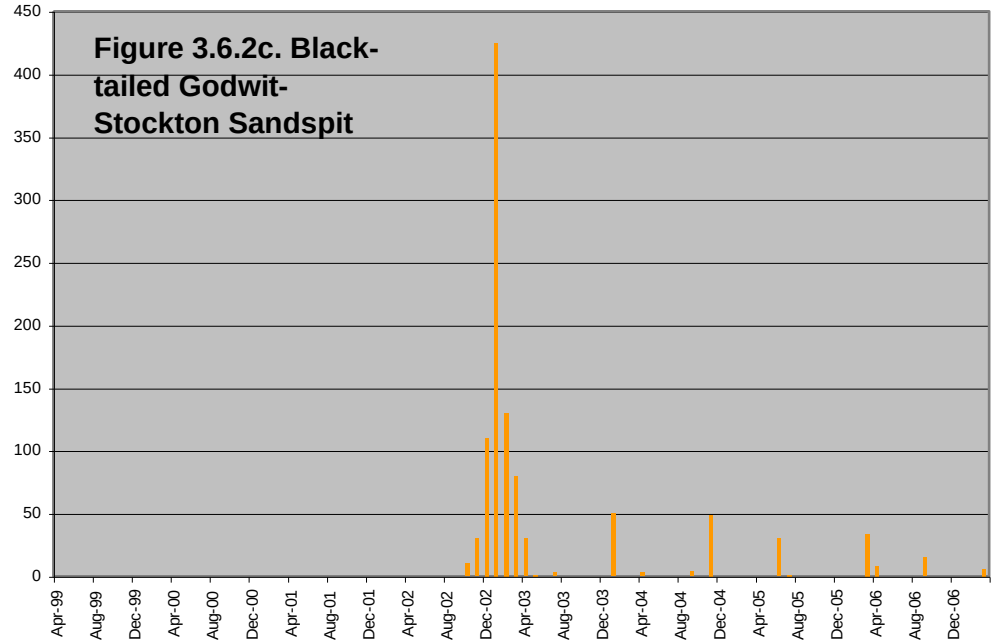


Figure 3.6.2c. Black-tailed Godwit- Stockton Sandspit
450
400
350
300
250
200
150
100
50
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

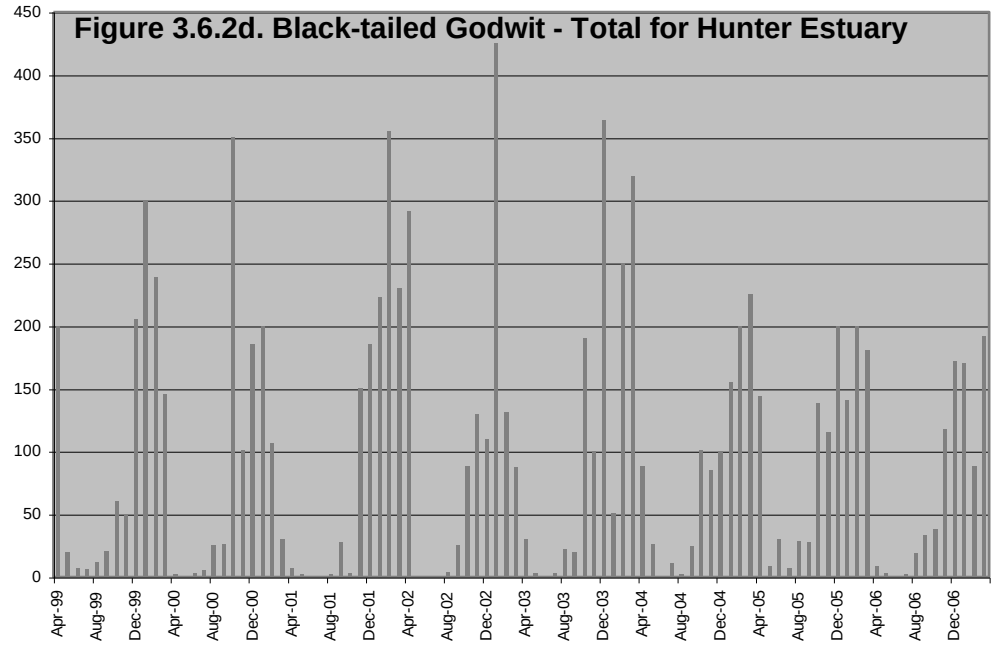


Figure 3.6.2d. Black-tailed Godwit - Total for Hunter Estuary
450
400
350
300
250
200
150
100
50
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

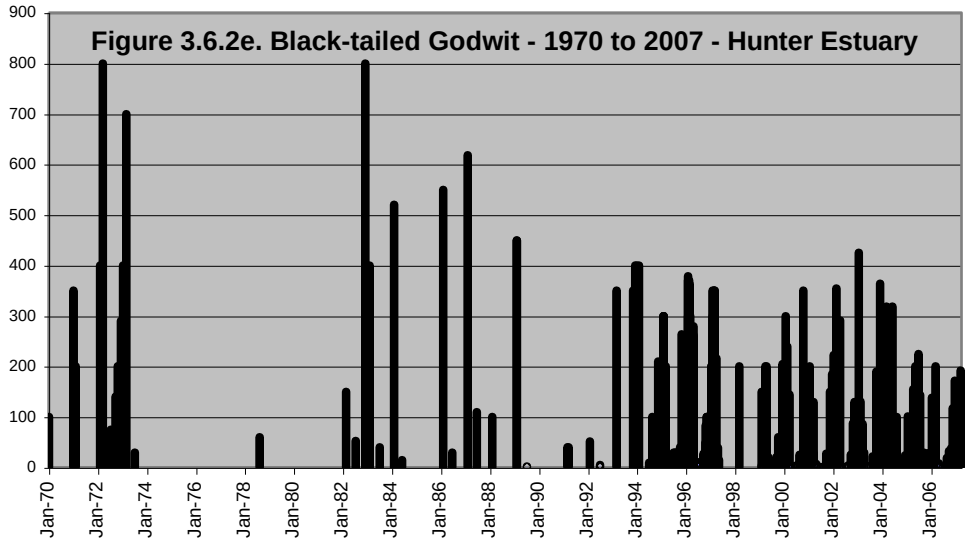


Figure 3.6.2e. Black-tailed Godwit - 1970 to 2007 - Hunter Estuary
900
800
700
600
500
400
300
200
100
0
Jan-70
Jan-72
Jan-74
Jan-76
Jan-78
Jan-80
Jan-82
Jan-84
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06

### 3.6.3 Bar-tailed Godwit

Bar-tailed Godwits confine their activities to the saline parts of the Hunter Estuary. They begin arriving in the Hunter Estuary during September, with the main influx in October, and then they depart during the following April (**Figure 3.6.3d**). During the summer of 2006/07 a maximum of 1,077 birds was present and a maximum of 219 birds over-wintered during 2006. At present nearly all Bar-tailed Godwits use the main daytime high tide roosts at the Kooragang Dykes and Stockton Sandspit. At night, during summer, they use Windeyers Reach Nocturnal Roost and at night, during winter, they have recently been observed roosting in Ash Island and Kooragang Island ponds (see list below) (Richardson 2004). Bar-tailed Godwits forage mainly in Fullerton Cove, Kooragang Dyke Ponds 2, 3 and 4, Stockton Sandspit, North Arm Sandflats and occasionally on Ash Island.

*Recorded at:*

Ash Island (6)
Fern Bay (32)
Fullerton Cove Beach (20), roosting
Fullerton Cove, main foraging area
Hunter Wetlands Centre (3)
Juncus Swamp (312) (also known as Coal Loader Pond, Richardson 2004) nocturnal winter roost
Kooragang Dykes (2,019), roosting, and Dyke Ponds 2, 3 and 4, foraging and roosting
Milhams Pond (55) nocturnal winter roost, (6) diurnal foraging
Newcastle Wetlands Reserve, 1970s to 80s
North Arm Sandflats, foraging
Stockton Sandspit (1,000), foraging and roosting
Swan Pond (143), nocturnal winter roost
Throsby Creek (1)
Wader Pond (143) nocturnal winter roost
Windeyers Reach Nocturnal Roost, roosting

*Status:* Common summer migrant. Breeds in the northern hemisphere. HBOC's monthly shorebird monitoring showed that maximum summer counts decreased from 2,019 during 1999/2000, to 1,077 by 2006/07 (**Figure 3.6.3d**). Numbers have declined significantly since the 1980s and early 1990s when 4,000 to 5,000 Bar-tailed Godwits used the Hunter Estuary (**Figure 3.6.3e**). Smaller numbers recorded prior to the 1980s may have been due to incomplete surveys owing to lack of access to the roost sites at that time. The spectacular increase in usage of Stockton Sandpit during 2002 (**Figure 3.6.3c**) was in response to the removal of mangroves from the sandspit during rehabilitation.

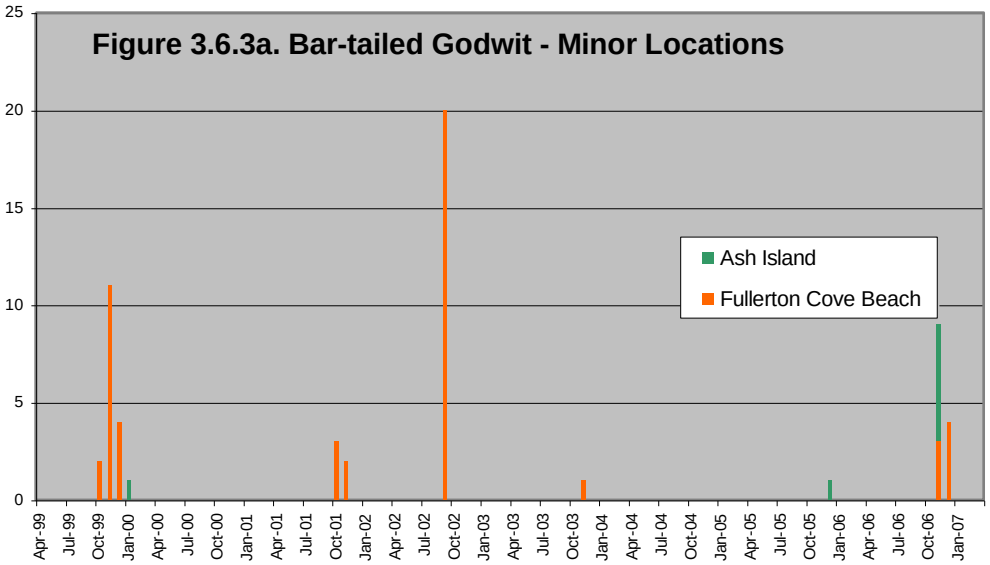
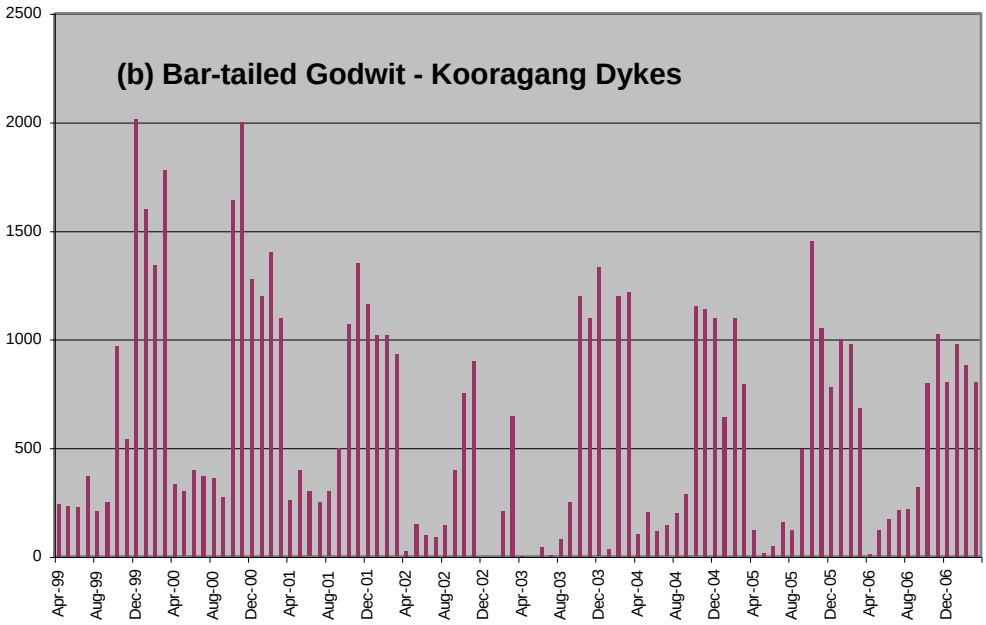
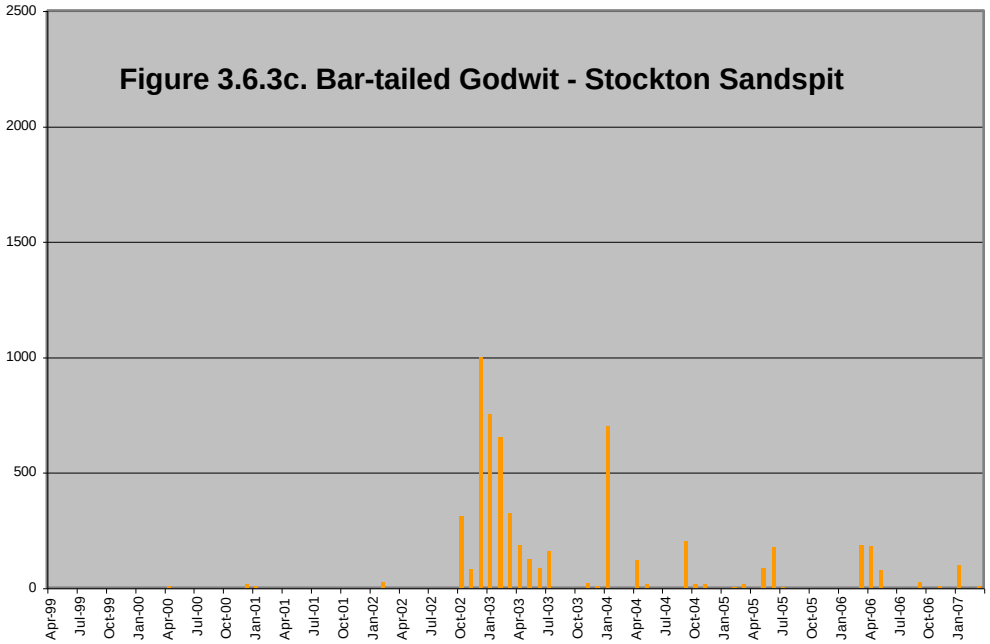


Figure 3.6.3a. Bar-tailed Godwit - Minor Locations
25
20
15
10
5
0
Ash Island
Fullerton Cove Beach
Apr-99
Jul-99
Oct-99
Jan-00
Apr-00
Jul-00
Oct-00
Jan-01
Apr-01
Jul-01
Oct-01
Jan-02
Apr-02
Jul-02
Oct-02
Jan-03
Apr-03
Jul-03
Oct-03
Jan-04
Apr-04
Jul-04
Oct-04
Jan-05
Apr-05
Jul-05
Oct-05
Jan-06
Apr-06
Jul-06
Oct-06
Jan-07


2500
2000
1500
1000
500
0
(b) Bar-tailed Godwit - Kooragang Dykes
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06


2500
2000
1500
1000
500
0
Figure 3.6.3c. Bar-tailed Godwit - Stockton Sandspit
Apr-99
Jul-99
Oct-99
Jan-00
Apr-00
Jul-00
Oct-00
Jan-01
Apr-01
Jul-01
Oct-01
Jan-02
Apr-02
Jul-02
Oct-02
Jan-03
Apr-03
Jul-03
Oct-03
Jan-04
Apr-04
Jul-04
Oct-04
Jan-05
Apr-05
Jul-05
Oct-05
Jan-06
Apr-06
Jul-06
Oct-06
Jan-07

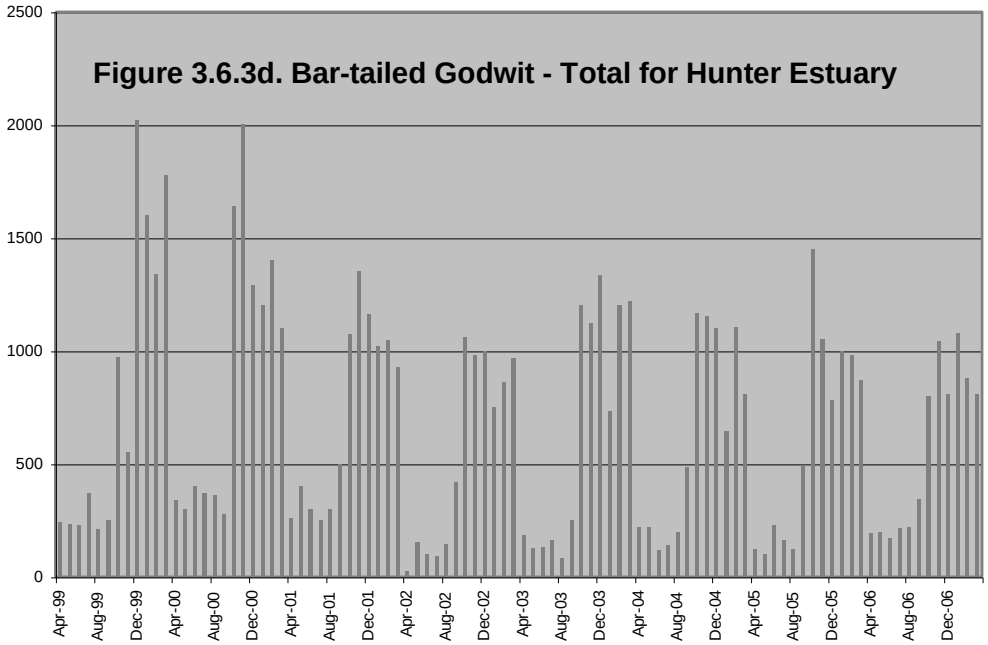


Figure 3.6.3d. Bar-tailed Godwit - Total for Hunter Estuary
2500
2000
1500
1000
500
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

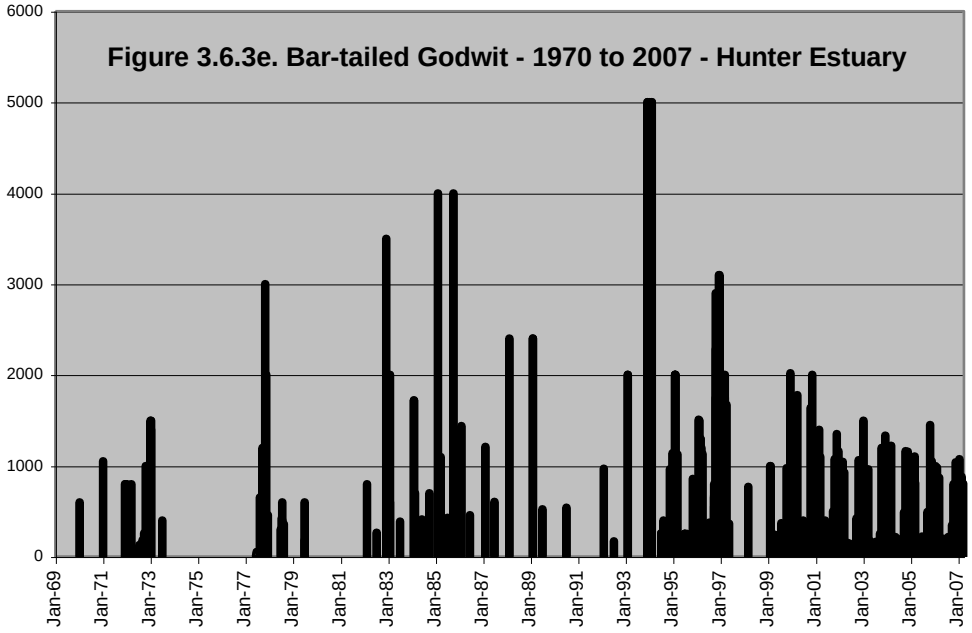


Figure 3.6.3e. Bar-tailed Godwit - 1970 to 2007 - Hunter Estuary
6000
5000
4000
3000
2000
1000
0
Jan-69
Jan-71
Jan-73
Jan-75
Jan-77
Jan-79
Jan-81
Jan-83
Jan-85
Jan-87
Jan-89
Jan-91
Jan-93
Jan-95
Jan-97
Jan-99
Jan-01
Jan-03
Jan-05
Jan-07

### 3.6.4 Little Curlew

Three Little Curlews have recently been recorded (2001) in the Hunter Estuary at Swan Pond, Ash Island. The only other records in the estuary are of three birds present in 1968 and one bird in 1969.

*Status:* Accidental summer migrant. Breeds in the northern hemisphere.

### 3.6.5 Whimbrel

Whimbrels inhabit only the saline parts of the Hunter Estuary. They begin arriving in the Hunter Estuary during September, with the main influx in October or later, and then they depart during the following April. During the summer of 2006/07 a maximum of 76 birds was present and an unusually large maximum number of 45 birds over-wintered during 2006 (also 53 in 2004). Most Whimbrels roost in mangroves at both Fullerton Cove Beach and, in smaller numbers, at Fern Bay. A few roost on the Kooragang Dykes. Whimbrels forage mainly at Fullerton Cove, Kooragang Dyke Ponds 2, 3 and 4, Stockton Sandspit, North Arm Sandflats and occasionally on Ash Island.

*Recorded at:*

Fern Bay (18), roosting
Fullerton Cove, foraging
Fullerton Cove Beach (185), roosting
Kooragang Dykes (59), roosting
Kooragang Dyke Ponds 2, 3 and 4 foraging
North Arm Sandflats (6), foraging
Scotts Point (Ash Is) (4), roosting in mangroves
Stockton Channel (7), roosting and foraging
Stockton Sandspit (22), roosting and foraging
Swan Pond (2)
Wader Pond (2)

*Status:* Usual summer migrant. Breeds in the northern hemisphere. HBOC's monthly shorebird monitoring showed that maximum summer counts decreased from 185 birds during the 2002/03 summer to 76 by 2006/07 (**Figure 3.6.5d**). Numbers appear to have also declined significantly since the mid-1990s when from 250 to 500 Whimbrel were recorded in the Hunter Estuary (**Figure 3.6.5e**). Smaller numbers recorded prior to the mid-1990s were probably due to incomplete surveys owing to lack of access to the roost sites at that time. Because Whimbrel roost in mangroves this is still a problem today for obtaining accurate estuary-wide counts and it is more than probable that the Hunter Estuary population is underestimated.

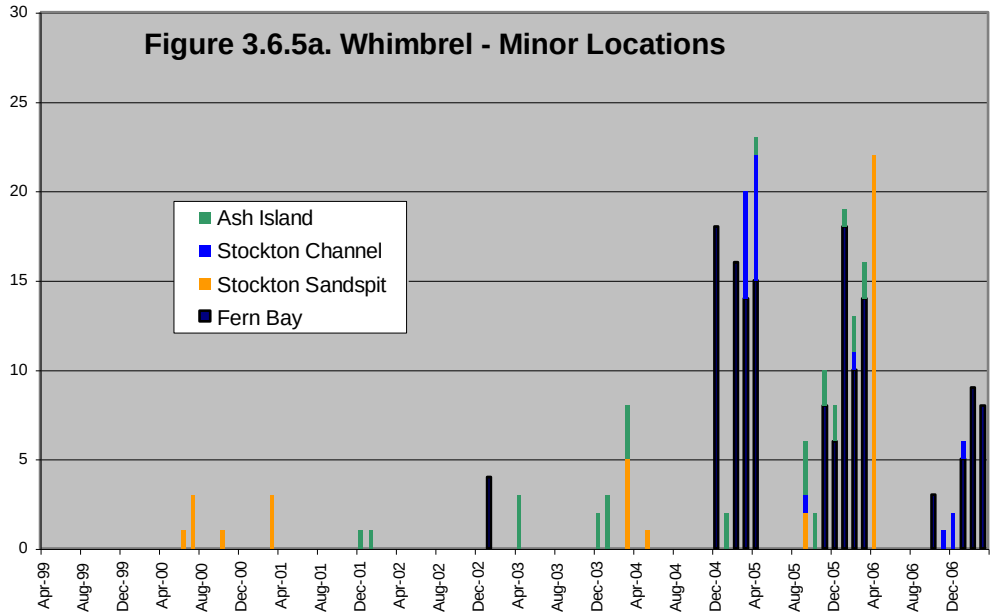


Figure 3.6.5a. Whimbrel - Minor Locations
Ash Island
Stockton Channel
Stockton Sandspit
Fern Bay
0
5
10
15
20
25
30
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

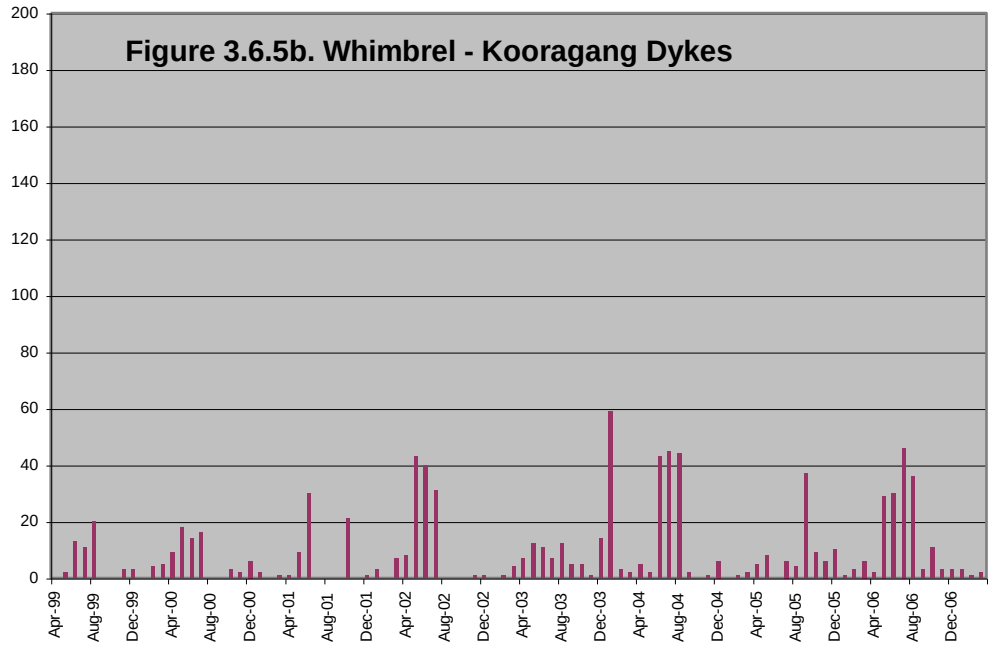


Figure 3.6.5b. Whimbrel - Kooragang Dykes
0
20
40
60
80
100
120
140
160
180
200
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

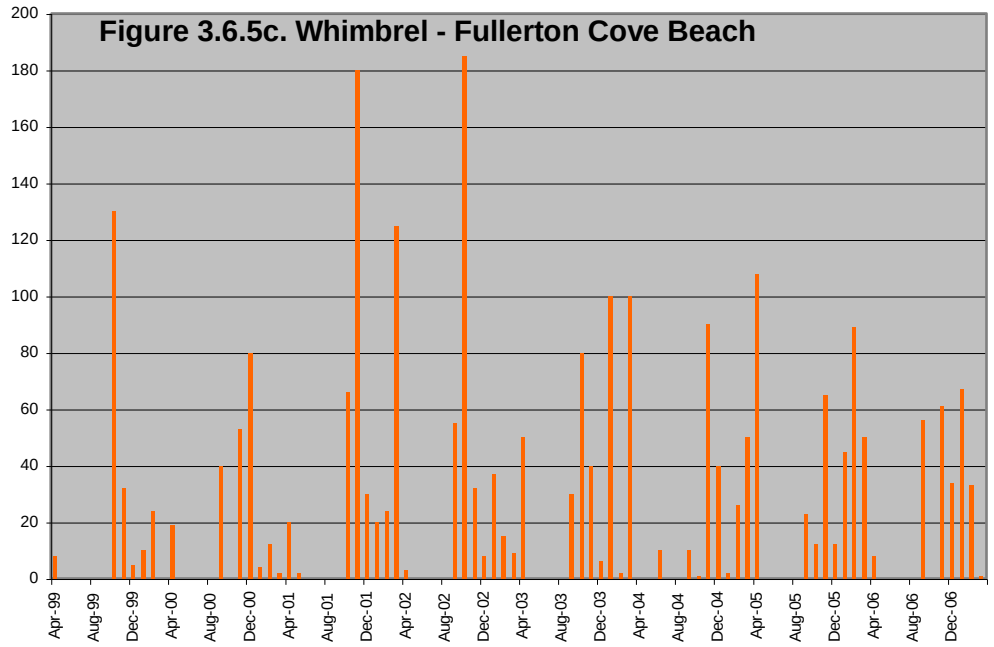


Figure 3.6.5c. Whimbrel - Fullerton Cove Beach
0
20
40
60
80
100
120
140
160
180
200
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

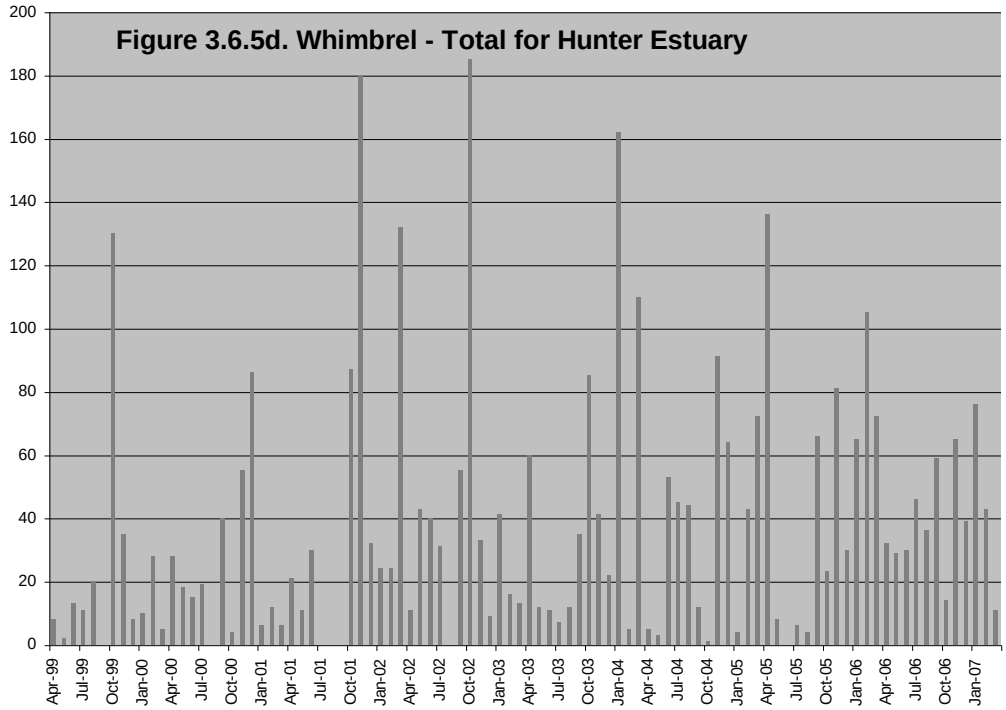


Figure 3.6.5d. Whimbrel - Total for Hunter Estuary
200
180
160
140
120
100
80
60
40
20
0
Apr-99
Jul-99
Oct-99
Jan-00
Apr-00
Jul-00
Oct-00
Jan-01
Apr-01
Jul-01
Oct-01
Jan-02
Apr-02
Jul-02
Oct-02
Jan-03
Apr-03
Jul-03
Oct-03
Jan-04
Apr-04
Jul-04
Oct-04
Jan-05
Apr-05
Jul-05
Oct-05
Jan-06
Apr-06
Jul-06
Oct-06
Jan-07

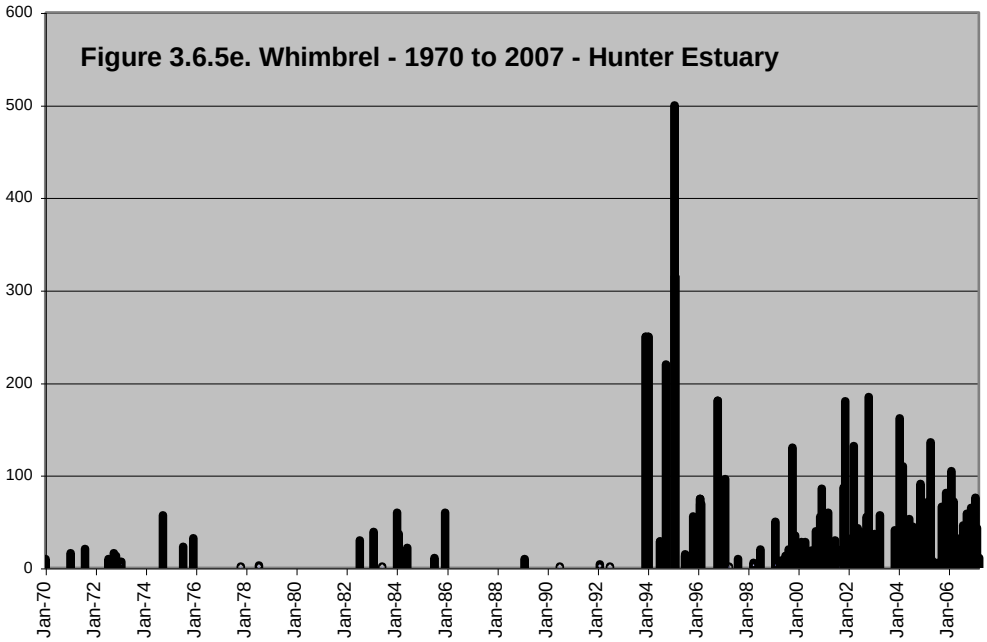


Figure 3.6.5e. Whimbrel - 1970 to 2007 - Hunter Estuary
600
500
400
300
200
100
0
Jan-70
Jan-72
Jan-74
Jan-76
Jan-78
Jan-80
Jan-82
Jan-84
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06

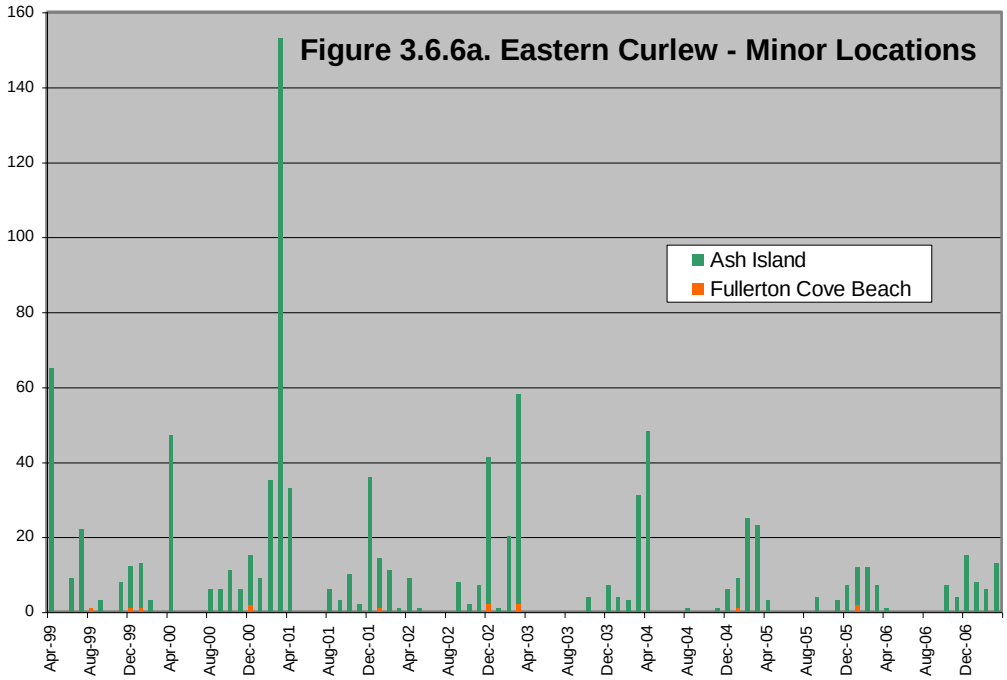
### 3.6.6 Eastern Curlew

Eastern Curlews confine their activities to the saline parts of the Hunter Estuary. They begin arriving in the Hunter Estuary during August to September, and then depart during March, sometimes as early as February (**Figure 3.6.6d**). A maximum of 555 birds was present during the summer of 2006/07 and 56 birds over-wintered during 2006. Most of the Eastern Curlews roost at the Kooragang Dykes and Stockton Sandspit. The increase in usage of the Stockton Sandspit after September 2002 occurred as a result of rehabilitation of the site. A few occasionally roost at Fullerton Cove Beach. At night Eastern Curlews roost at Windeyers Reach Nocturnal Roost. They forage mainly at Fullerton Cove, but also at Stockton Sandspit, North Arm Sandflats and, in smaller but declining numbers, on Ash Island, mainly in Wader Pond (**Figure 3.6.6a**).

*Recorded at:*

Fish Fry Flats (22) foraging
Fullerton Cove Beach (2), roosting
Fullerton Cove, foraging
Kooragang Dykes (530), roosting
Milhams Pond (24) foraging and nocturnal roosting
North Arm Sandflats, foraging
Phoenix Flats (4), foraging
Stockton Sandspit (440), roosting and foraging
Swan Pond (20) foraging
Throsby Creek (5)
Wader Pond (153) foraging
Windeyers Reach Nocturnal Roost, roosting

*Status:* Common summer migrant. Breeds in the northern hemisphere. HBOC's monthly shorebird monitoring showed that there has been a slight decline in numbers since 1999. There is a more noticeable decline in the number of over-wintering birds, which is of concern as they are the juveniles from the previous year's breeding event (**Figure 3.6.6d**). From 800 to 1,000 Eastern Curlews were present in the estuary until the late 1990s, but since then numbers have usually been between 400 and 600 (**Figure 3.6.6e**).



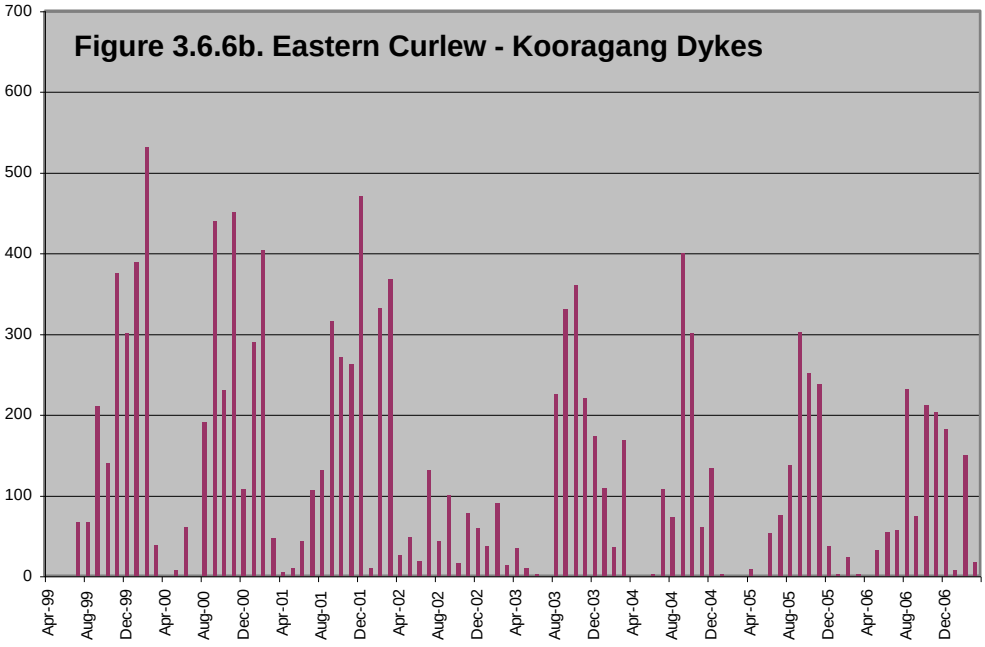


Figure 3.6.6b. Eastern Curlew - Kooragang Dykes
700
600
500
400
300
200
100
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

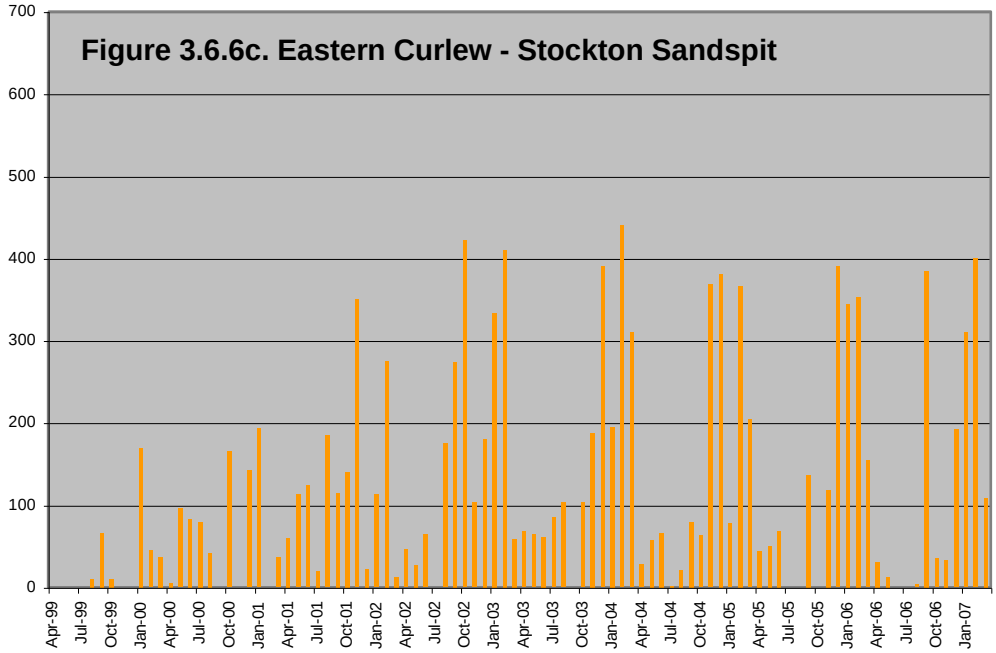


Figure 3.6.6c. Eastern Curlew - Stockton Sandspit
700
600
500
400
300
200
100
0
Apr-99
Jul-99
Oct-99
Jan-00
Apr-00
Jul-00
Oct-00
Jan-01
Apr-01
Jul-01
Oct-01
Jan-02
Apr-02
Jul-02
Oct-02
Jan-03
Apr-03
Jul-03
Oct-03
Jan-04
Apr-04
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Apr-05
Jul-05
Oct-05
Jan-06
Apr-06
Jul-06
Oct-06
Jan-07

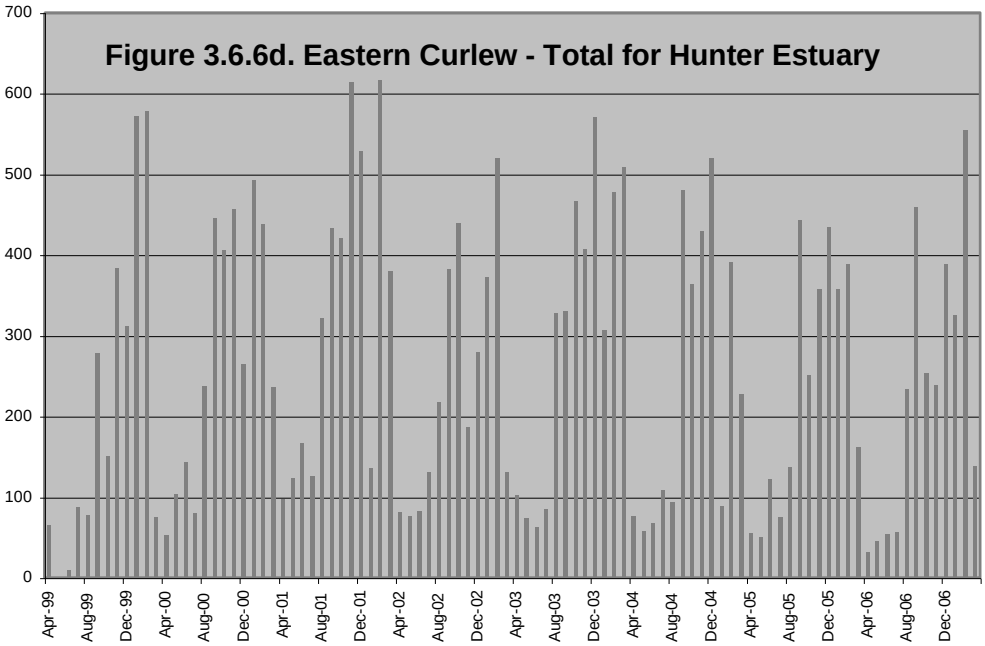


Figure 3.6.6d. Eastern Curlew - Total for Hunter Estuary
700
600
500
400
300
200
100
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

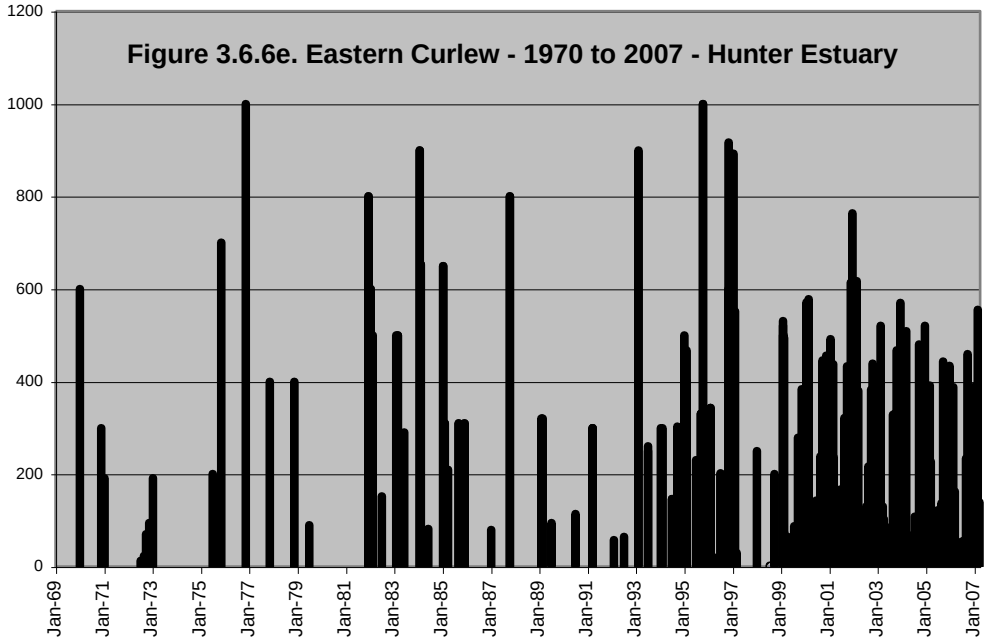


Figure 3.6.6e. Eastern Curlew - 1970 to 2007 - Hunter Estuary
1200
1000
800
600
400
200
0
Jan-69
Jan-71
Jan-73
Jan-75
Jan-77
Jan-79
Jan-81
Jan-83
Jan-85
Jan-87
Jan-89
Jan-91
Jan-93
Jan-95
Jan-97
Jan-99
Jan-01
Jan-03
Jan-05
Jan-07

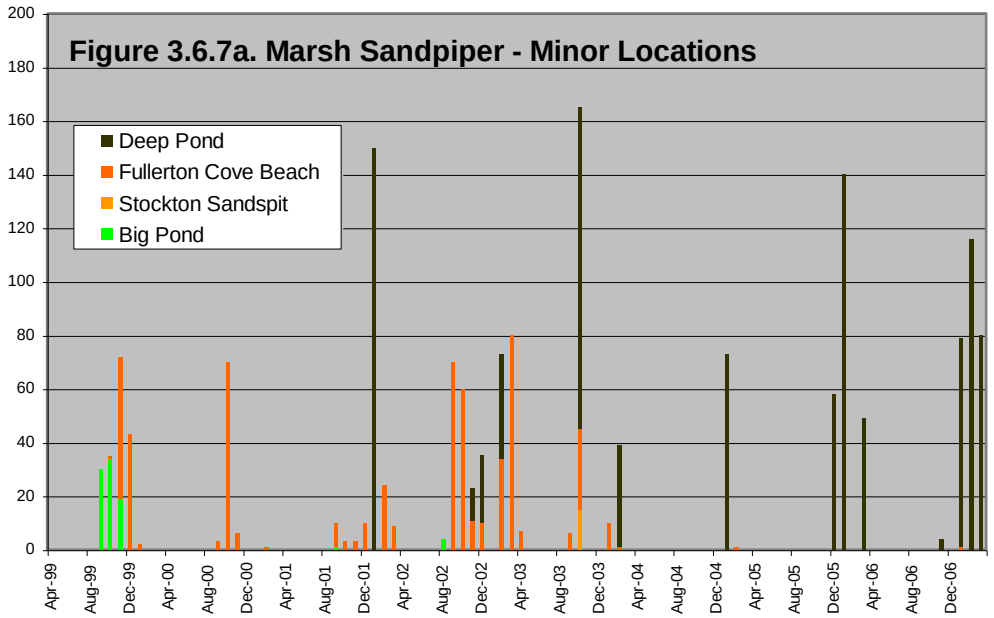
### 3.6.7 Marsh Sandpiper

Marsh Sandpipers are widespread throughout the Hunter Estuary as they inhabit both the saline parts of the estuary and the peripheral freshwater swamps. They begin arriving in the Hunter Estuary during September, and then depart during the following March and into April (**Figure 3.6.7d**). Up to 196 birds were present during the summer of 2006/07. Marsh Sandpipers generally do not over-winter in the Hunter Estuary. Most Marsh Sandpipers roost at the Kooragang Dykes and smaller numbers roost at Stockton Sandspit, Fullerton Cove Beach and Ash Island. They forage over many saltmarsh ponds on Ash Island, probably the most important foraging area, and also on many other freshwater wetlands.

*Recorded at:*

Ash Island (289), foraging and roosting
Big Pond (100), foraging
Deep Pond (270), foraging and roosting
Fish Fry Flats (2), foraging
Fullerton Cove Beach (80), roosting
Hexham Swamp (50)
Hunter Wetlands Centre (7), foraging
Irrawang Swamp (4)
Kooragang Dykes (280), roosting
Lenaghans Wetland (1-2)
Milhams Pond (36), foraging
Pambalong Nature Reserve (20+)
Phoenix Flats
Sharpies Flat (3), foraging
Stockton Sandspit (15), foraging and roosting
Swan Pond (152), foraging and roosting
Tarro Swamp (3).
Wader Pond (142), foraging and roosting

*Status:* Usual summer migrant. Breeds in the northern hemisphere. HBOC's monthly shorebird monitoring shows that maximum summer counts have been fairly consistent at between 100 and 160 birds with one count of 324 since 1999/2000 (**Figure 3.6.7d**). Several counts between 1970 and 1997 have been well above 300, indicating that there may have been a decline in numbers during the last decade (**Figure 3.6.7e**).



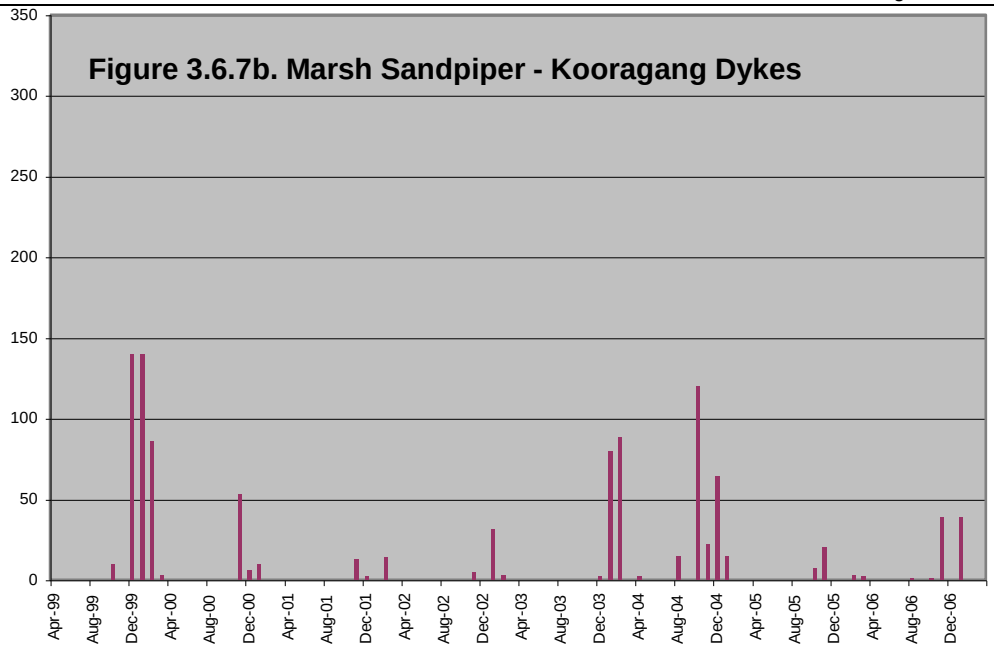


Figure 3.6.7b. Marsh Sandpiper - Kooragang Dykes
350
300
250
200
150
100
50
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

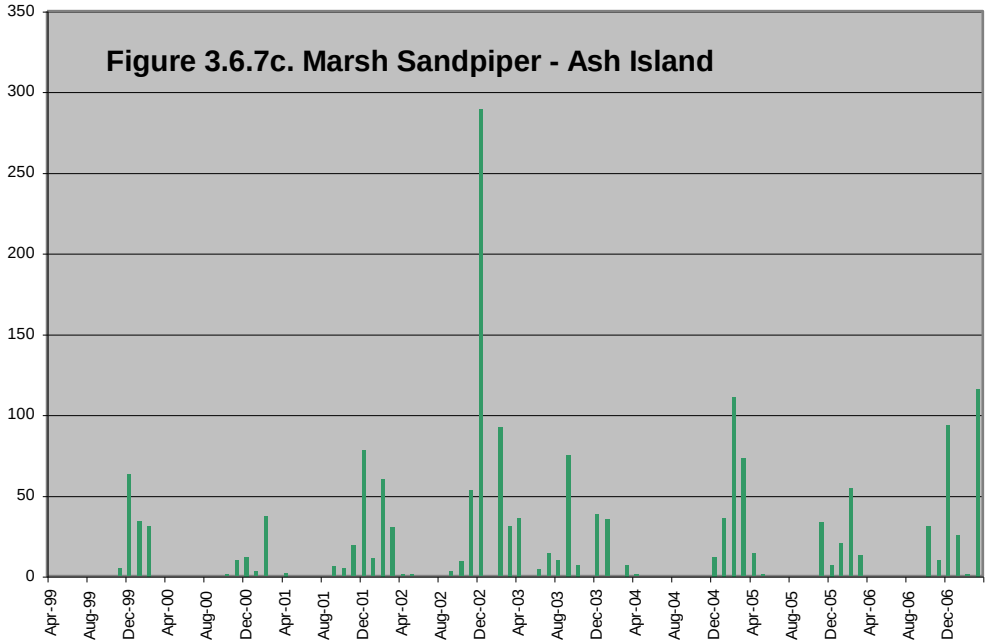


Figure 3.6.7c. Marsh Sandpiper - Ash Island
350
300
250
200
150
100
50
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

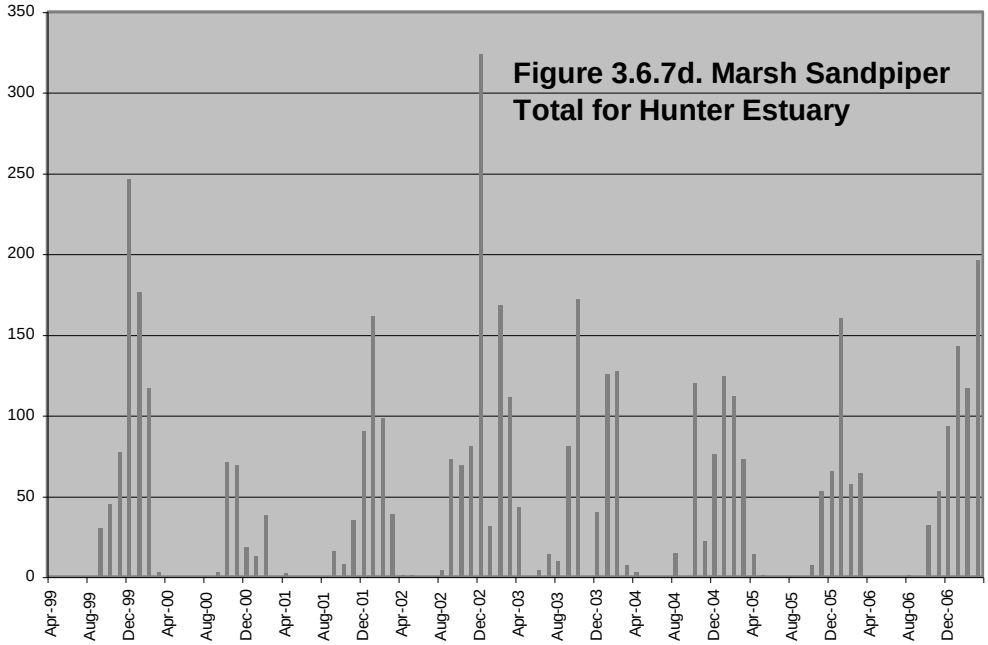


Figure 3.6.7d. Marsh Sandpiper
Total for Hunter Estuary
350
300
250
200
150
100
50
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

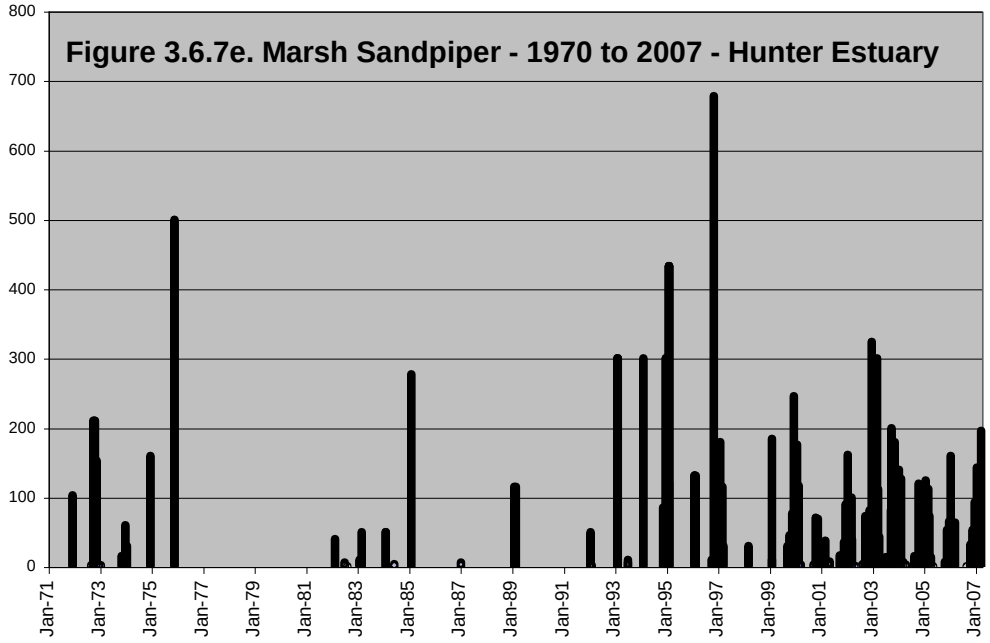


Figure 3.6.7e. Marsh Sandpiper - 1970 to 2007 - Hunter Estuary
800
700
600
500
400
300
200
100
0
Jan-71
Jan-73
Jan-75
Jan-77
Jan-79
Jan-81
Jan-83
Jan-85
Jan-87
Jan-89
Jan-91
Jan-93
Jan-95
Jan-97
Jan-99
Jan-01
Jan-03
Jan-05
Jan-07

### 3.6.8 Common Greenshank

Common Greenshanks mostly confine their activities to the saline parts of the Hunter Estuary, but also inhabit some of the peripheral freshwater swamps. They begin arriving in the Hunter Estuary during September, and then depart during the following March or April (**Figure 3.6.8d**). Up to 150 birds were present during the summer of 2006/07. Small numbers of Common Greenshanks often over-winter in the Hunter Estuary. During the 2006 winter numbers increased, as winter progressed, from 6 to 20 indicating that other over-wintering birds from outside the immediate environs of the estuary were moving to the larger source of food provided by the Hunter Estuary. Most Common Greenshanks roost at the Kooragang Dykes and smaller numbers roost at Ash Island and Fullerton Cove Beach (and recorded once on Sandy Island Beach since rehabilitation). There is a very definite decline in the number of greenshanks using the Fullerton Cove Beach Roost indicating the demise of this important beach roost. Greenshanks forage mainly in the Ash Island/Kooragang Island area.

*Recorded at:*

Ash Island (129), foraging
Big Pond (30), foraging; in the past
Deep Pond (21), foraging and roosting
Fern Bay (1)
Fish Fry Flats (2), foraging
Fullerton Cove Beach (100), roosting
Hexham Swamp (1-2), foraging
Hunter Wetlands Centre (1-5), foraging
Kooragang Dykes (315), roosting
Kooragang Dyke Ponds, foraging and roosting
Melaleuca Swale
Milhams Pond, foraging; and probable night roost
Pambalong Nature Reserve (20-25), foraging
Phoenix Flats (1), foraging
Sandy Island Beach (~6), roosting
Scotts Point (3)
Sharpies Flat (19), foraging and roosting
Stockton Sandspit (3), foraging and roosting
Swan Pond (78), foraging and roosting
Tarro Swamp (4)
Teal Waters (5)
Wader Pond (75), foraging and roosting

*Status:* Usual summer migrant. Breeds in the northern hemisphere. HBOC's monthly shorebird monitoring shows that maximum summer counts are fairly consistent at between 150 and 200 birds with a few spikes up to 333 (**Figure 3.6.8d**). Historical data shows that maximum peak counts have definitely declined since 1985 and that there is a slight decreasing trend for the more common maximum numbers (**Figure 3.6.8e**).

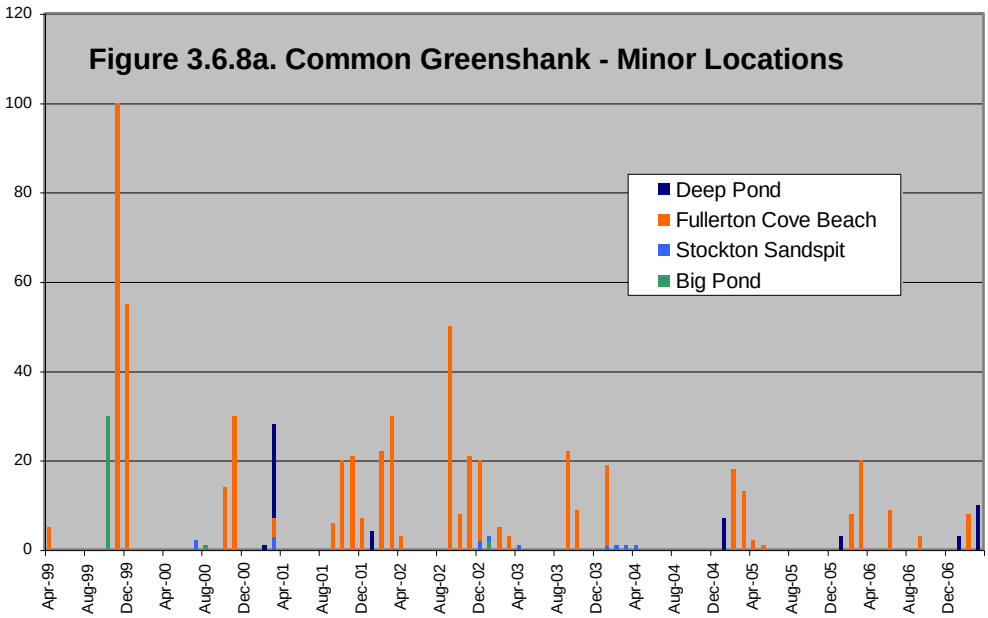


Figure 3.6.8a. Common Greenshank - Minor Locations
120
100
80
60
40
20
0
Deep Pond
Fullerton Cove Beach
Stockton Sandspit
Big Pond
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

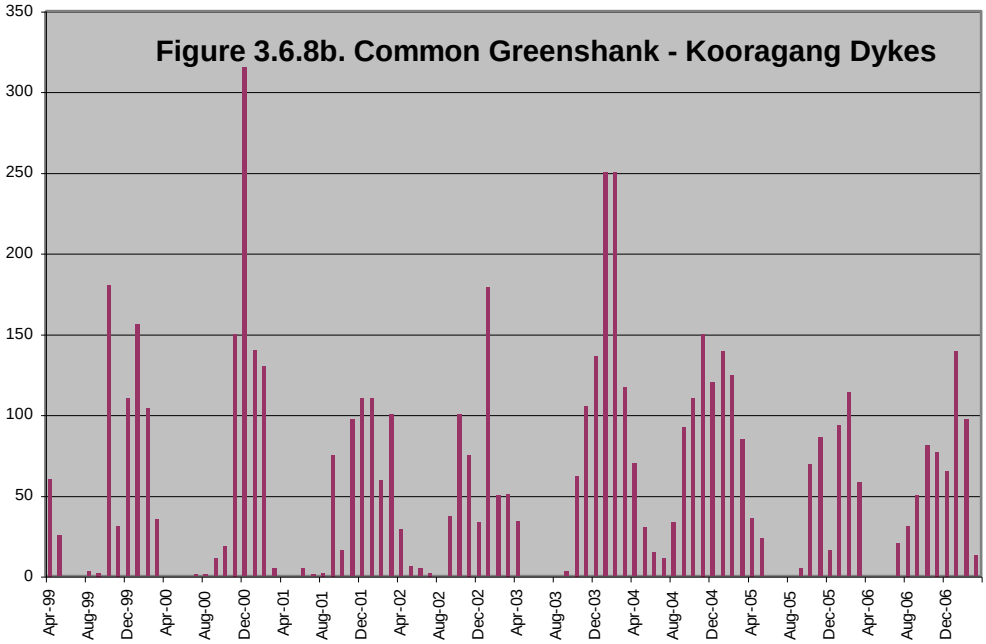


Figure 3.6.8b. Common Greenshank - Kooragang Dykes
350
300
250
200
150
100
50
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

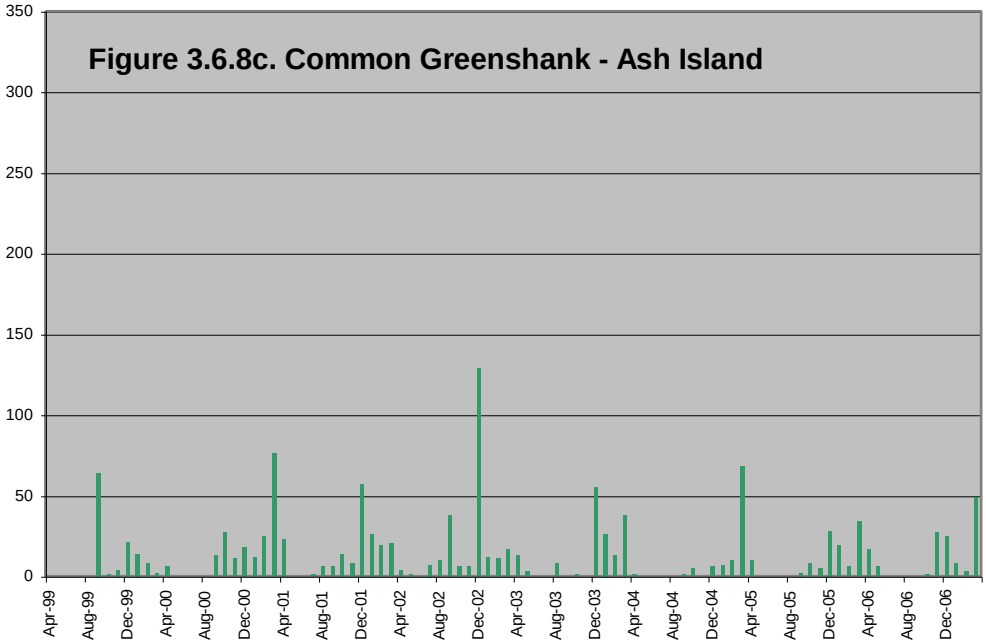


Figure 3.6.8c. Common Greenshank - Ash Island
350
300
250
200
150
100
50
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

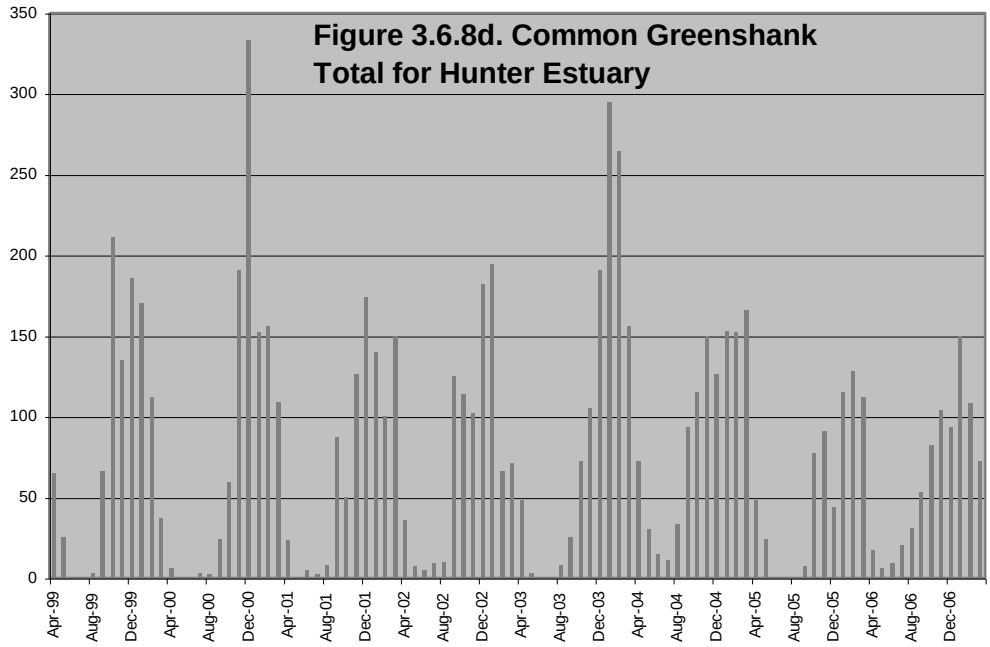


Figure 3.6.8d. Common Greenshank
Total for Hunter Estuary
350
300
250
200
150
100
50
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

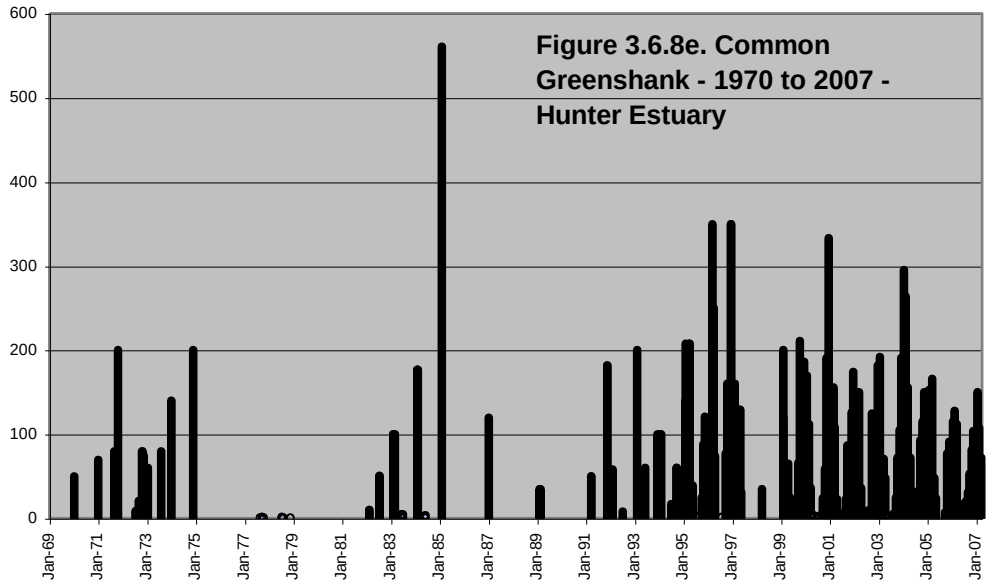


Figure 3.6.8e. Common Greenshank - 1970 to 2007 - Hunter Estuary
600
500
400
300
200
100
0
Jan-69
Jan-71
Jan-73
Jan-75
Jan-77
Jan-79
Jan-81
Jan-83
Jan-85
Jan-87
Jan-89
Jan-91
Jan-93
Jan-95
Jan-97
Jan-99
Jan-01
Jan-03
Jan-05
Jan-07

### 3.6.9 Wood Sandpiper

Wood Sandpipers have been observed occasionally in freshwater swamps in the Hunter Estuary, most often at Pambalong Nature Reserve (7), also at Kooragang Island and the Hunter Wetlands Centre (1).

*Status:* Rare summer migrant. Breeds in the northern hemisphere.

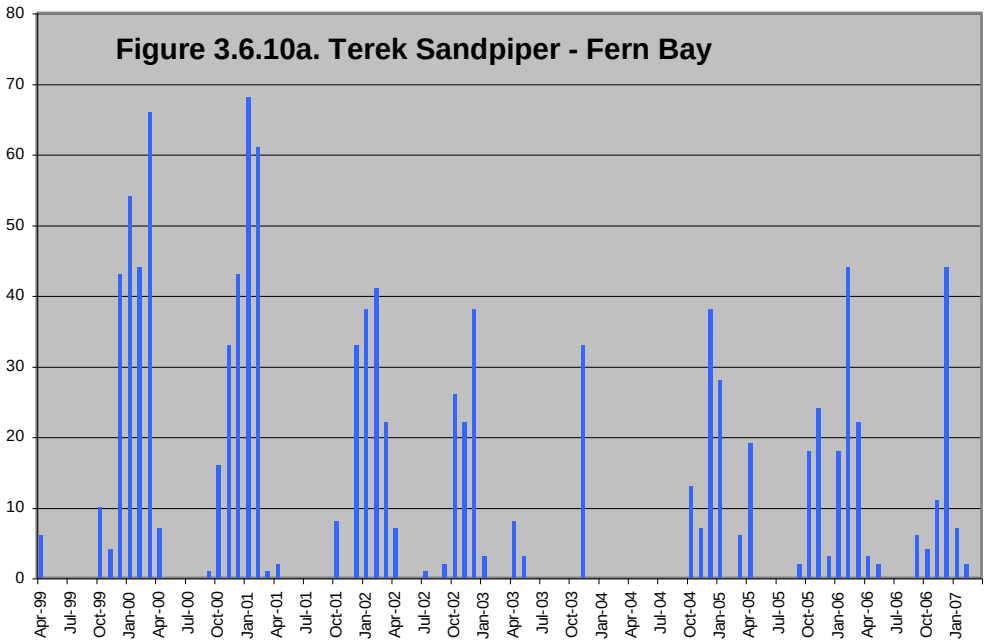
### 3.6.10 Terek Sandpiper

Terek Sandpipers are found only in saline habitats in the Hunter Estuary. They begin arriving in the Hunter Estuary during late September and October, and depart during the following March to early April. Up to 44 birds were present during the summer of 2006/07 (**Figure 3.6.10c**). Terek Sandpipers do not over-winter in the Hunter Estuary. Terek Sandpipers roost in Fern Bay on oyster racks or on the boulder-lined foreshore, often in company with Grey-tailed Tattlers. Rarely, single birds have been observed roosting elsewhere, at places such as the Kooragang Dykes and Fullerton Cove. However, they have also been observed roosting in mangroves and, together with Whimbrels, are the only shorebirds to regularly roost in mangroves in the Hunter Estuary. Their cryptic habit of roosting in mangroves suggests that total counts of Terek Sandpipers in the estuary may be underestimated.

*Recorded at:*

Fern Bay (68), foraging and roosting
Fullerton Cove Beach (1), roosting
Kooragang Dykes (1), roosting
North Arm Sandflats (12), foraging
Stockton Channel (10+)
Swan Pond, rare observation

*Status:* Usual summer migrant. Breeds in the northern hemisphere. HBOC's monthly shorebird monitoring showed that maximum summer counts declined from 66 during 1999/00 and 68 during 2000/01 to 44 during 2006/07 (**Figure 3.6.10c**). Historical records confirm that this trend has been ongoing since the 1970s when as many as 600 were recorded (an exception to the general decline was a spike in numbers during 1996/7 of 633 birds (**Figure 3.6.10d**).



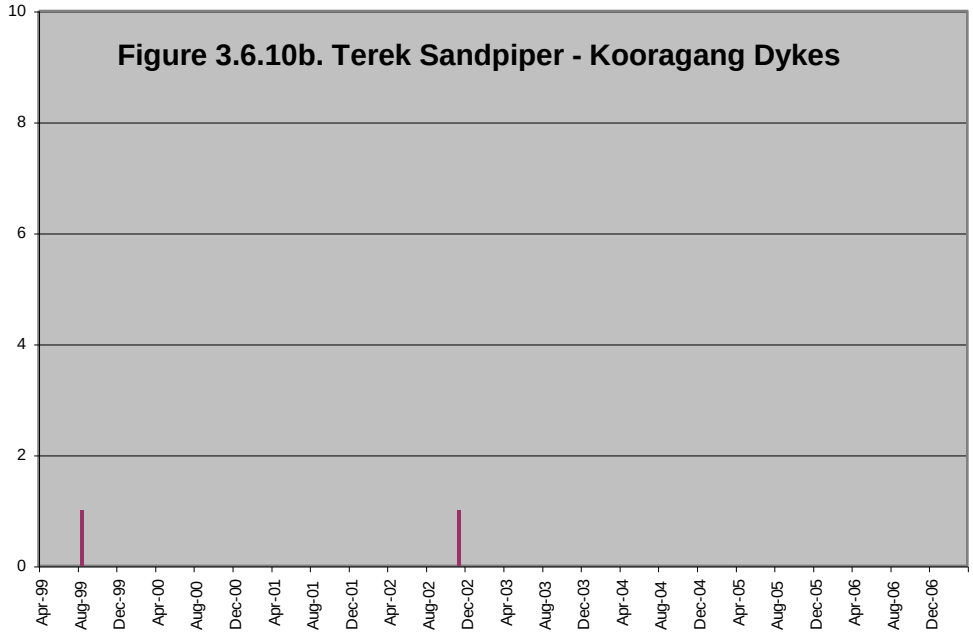


Figure 3.6.10b. Terek Sandpiper - Kooragang Dykes
10
8
6
4
2
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

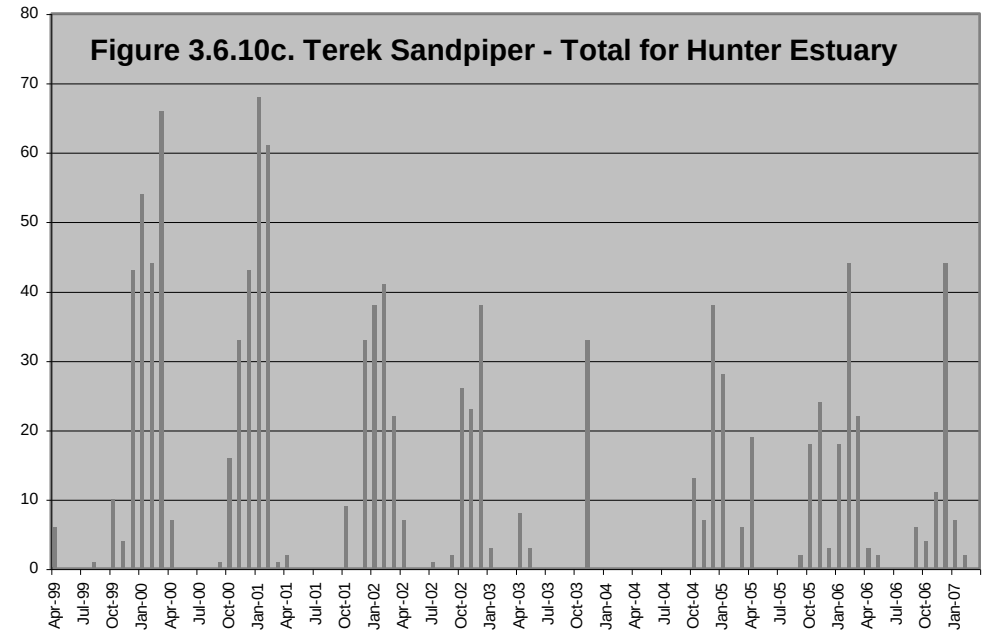


Figure 3.6.10c. Terek Sandpiper - Total for Hunter Estuary
80
70
60
50
40
30
20
10
0
Apr-99
Jul-99
Oct-99
Jan-00
Apr-00
Jul-00
Oct-00
Jan-01
Apr-01
Jul-01
Oct-01
Jan-02
Apr-02
Jul-02
Oct-02
Jan-03
Apr-03
Jul-03
Oct-03
Jan-04
Apr-04
Jul-04
Oct-04
Jan-05
Apr-05
Jul-05
Oct-05
Jan-06
Apr-06
Jul-06
Oct-06
Jan-07

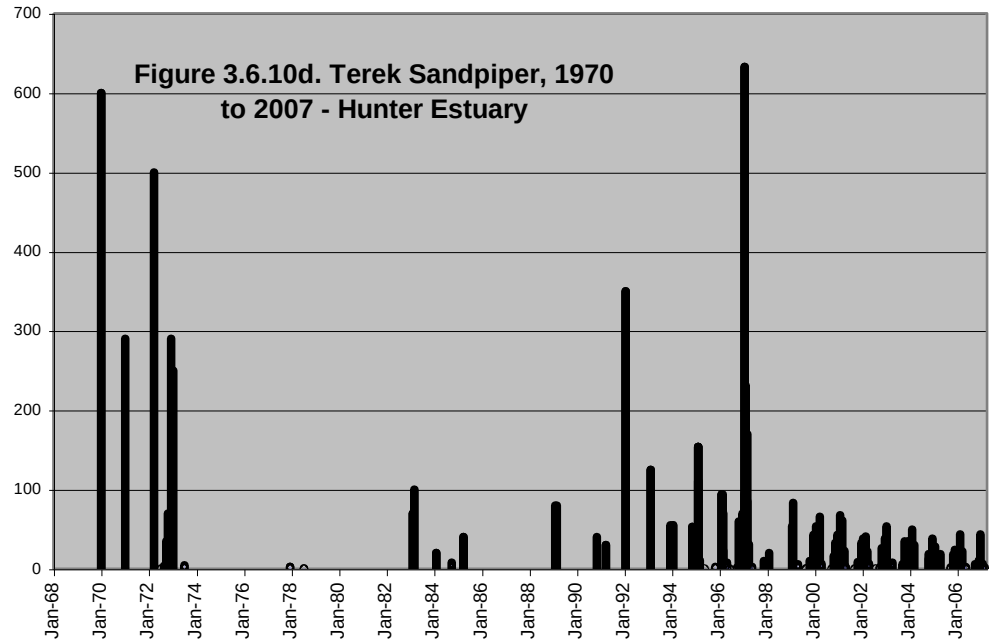


Figure 3.6.10d. Terek Sandpiper, 1970 to 2007 - Hunter Estuary
700
600
500
400
300
200
100
0
Jan-68
Jan-70
Jan-72
Jan-74
Jan-76
Jan-78
Jan-80
Jan-82
Jan-84
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06

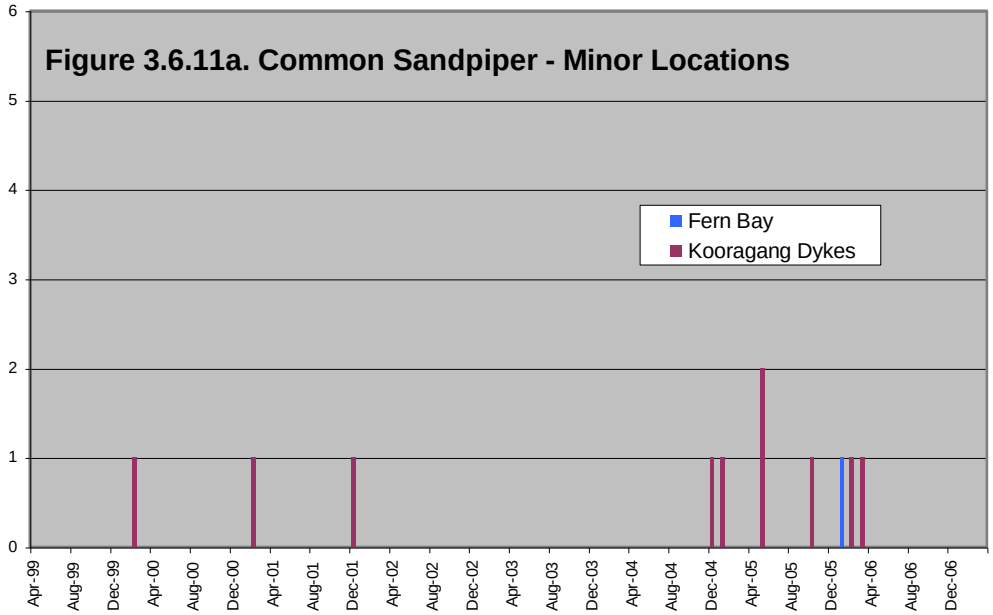
### 3.6.11 Common Sandpiper

Common Sandpipers are, in fact, uncommon in the Hunter Estuary. They are usually observed as single birds and rarely as pairs, mostly in saltwater habitats. They begin arriving in the Hunter Estuary during October, and then depart during the following April. Up to 5 birds were present during the summer of 2006/07 (**Figure 3.6.11d**). Common Sandpipers do not over-winter in the Hunter Estuary.

*Recorded at:*

Ash Island (5)
Fern Bay (1), roosting
Kooragang Dykes (2)
Mosquito Creek (1), foraging
Port Waratah (1)
Scotts Point (5)
Stockton Channel (4), foraging and roosting
Swan Pond (1)

*Status:* Uncommon summer migrant. Breeds in the northern hemisphere. HBOC's monthly shorebird monitoring shows that maximum summer counts have increased from no observations in 1999 to a maximum for the entire estuary of 6 during 2005 (**Figure 3.6.11d**). However, this may be an observational effect owing to greater access to more locations. Because they are solitary and cryptic their total population in the estuary is uncertain, but probably still very low. Also, because of the generally very low numbers, the population trend since 1970 is unclear (**Figure 3.6.11e**).



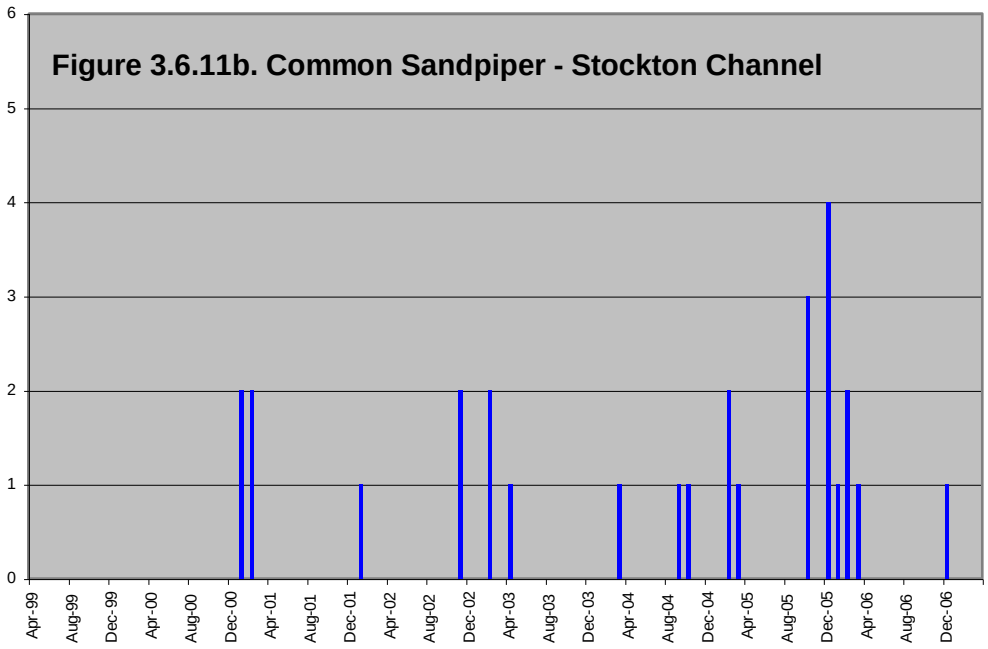


Figure 3.6.11b. Common Sandpiper - Stockton Channel
0
1
2
3
4
5
6
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

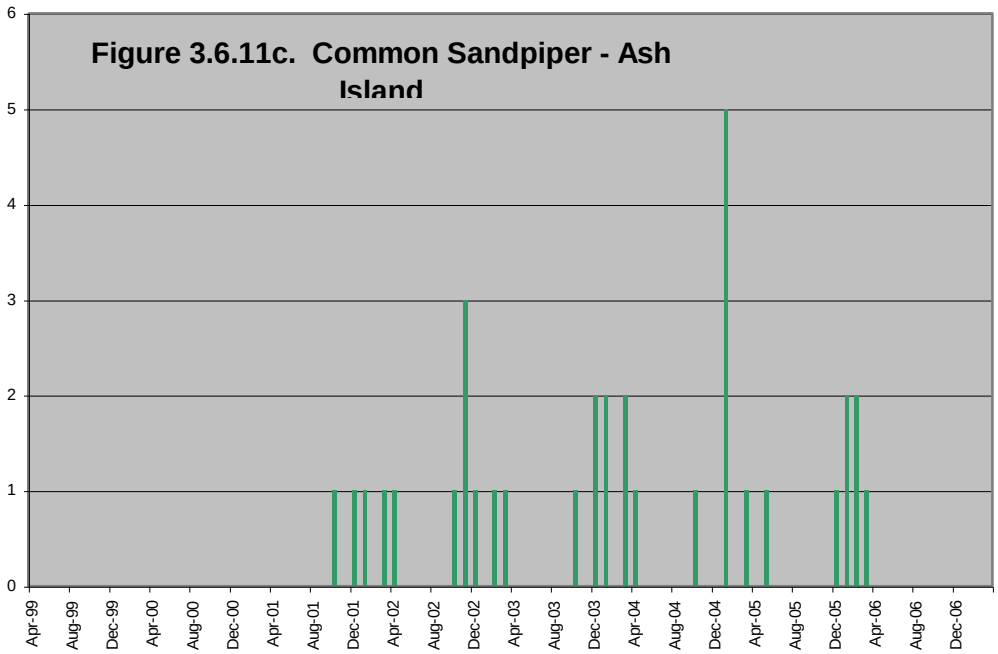


Figure 3.6.11c. Common Sandpiper - Ash Island
0
1
2
3
4
5
6
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

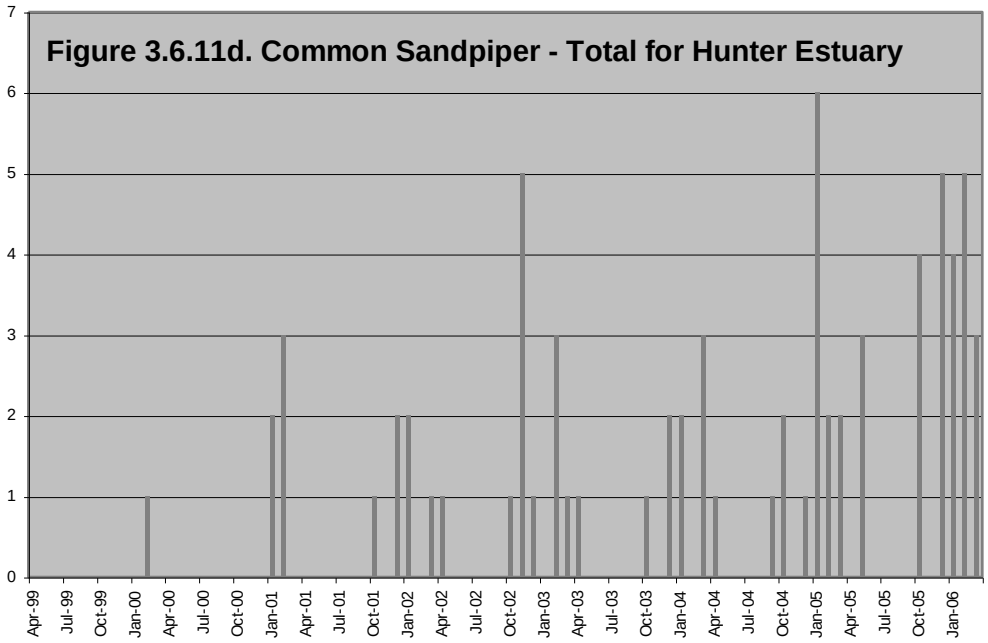


Figure 3.6.11d. Common Sandpiper - Total for Hunter Estuary
0
1
2
3
4
5
6
7
Apr-99
Jul-99
Oct-99
Jan-00
Apr-00
Jul-00
Oct-00
Jan-01
Apr-01
Jul-01
Oct-01
Jan-02
Apr-02
Jul-02
Oct-02
Jan-03
Apr-03
Jul-03
Oct-03
Jan-04
Apr-04
Jul-04
Oct-04
Jan-05
Apr-05
Jul-05
Oct-05
Jan-06

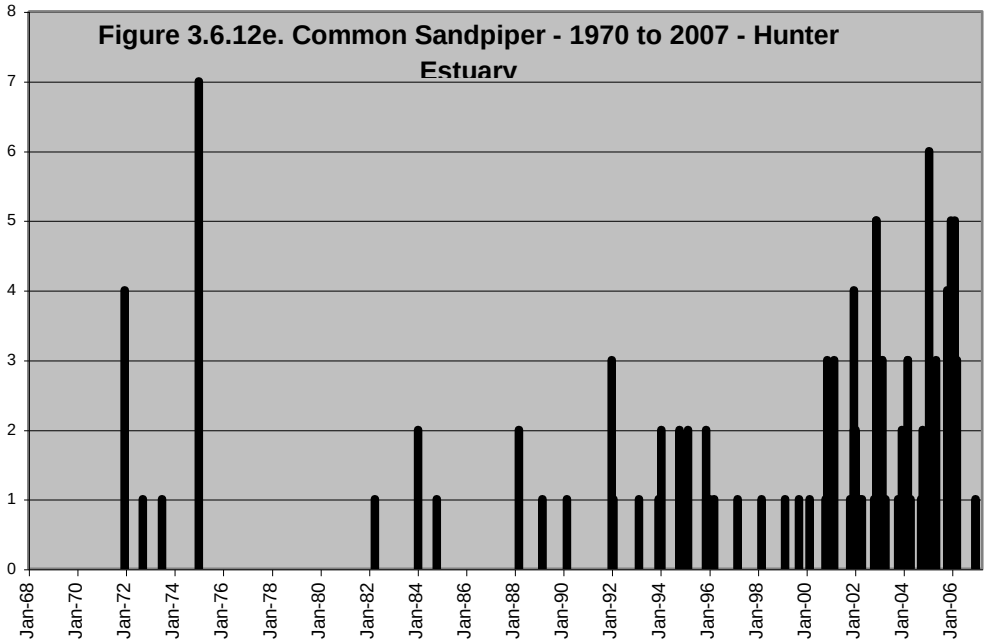


Figure 3.6.12e. Common Sandpiper - 1970 to 2007 - Hunter Estuary
8
7
6
5
4
3
2
1
0
Jan-68
Jan-70
Jan-72
Jan-74
Jan-76
Jan-78
Jan-80
Jan-82
Jan-84
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06

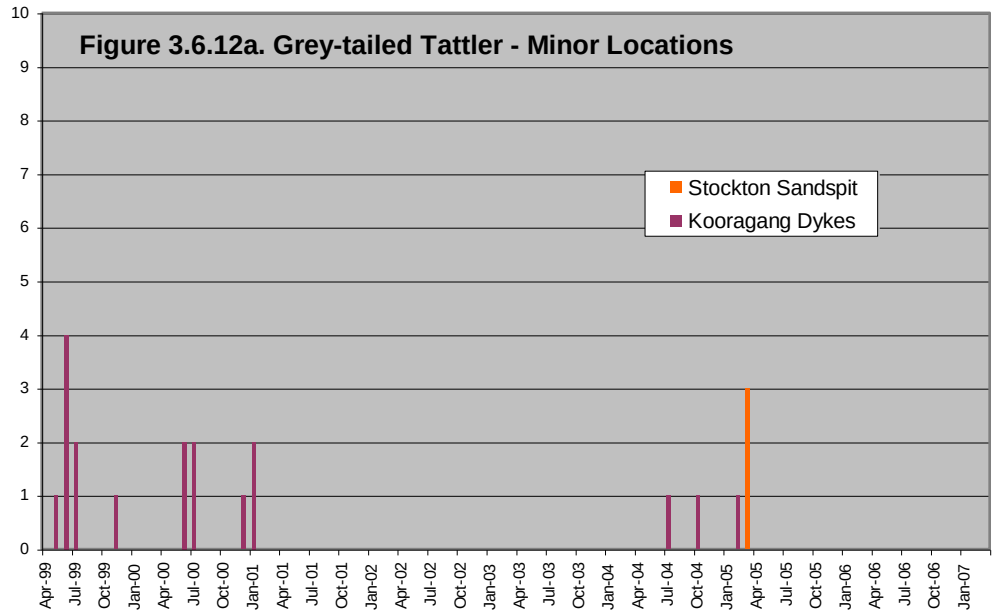
### 3.6.12 Grey-tailed Tattler

Grey-tailed Tattlers are found in saltwater habitats along the North Arm of the Hunter River, usually in small numbers. They begin arriving in the Hunter Estuary during September and October, and depart during the following April/May (**Figure 3.6.12d**). Up to 38 birds were present during the summer of 2006/07. Grey-tailed Tattlers often over-winter in the Hunter Estuary in small numbers, usually less than six. They are most often observed roosting at Fern Bay and Stockton Channel. They forage on mudflats around Stockton Sandspit, North Arm Sandflats and into Fullerton Cove, and along the eastern side of Stockton Channel, south of Stockton Bridge to a small-boat harbour.

*Recorded at:*

Fern Bay (40+), roosting and foraging
Kooragang Dykes (4), roosting
North Arm Sandflats (14), foraging
South Arm, foraging
Stockton Channel (27), roosting and foraging
Stockton Sandspit (30+), foraging

*Status:* Summer migrant. Breeds in the northern hemisphere. HBOC's monthly shorebird monitoring shows that maximum summer counts have increased from 21 during1999/2000, to 45 in recent years (**Figure 3.6.12d**). However, it is clear that 80 to 100 birds were present during the 1970s until 1996/7 (**Figure 3.6.12e**). Thus, numbers appear to have declined in the last decade. Low to zero counts at times, during the summers of 2002/03 and 2003/04, indicate that the tattlers were roosting in places not counted during HBOC's monthly surveys.



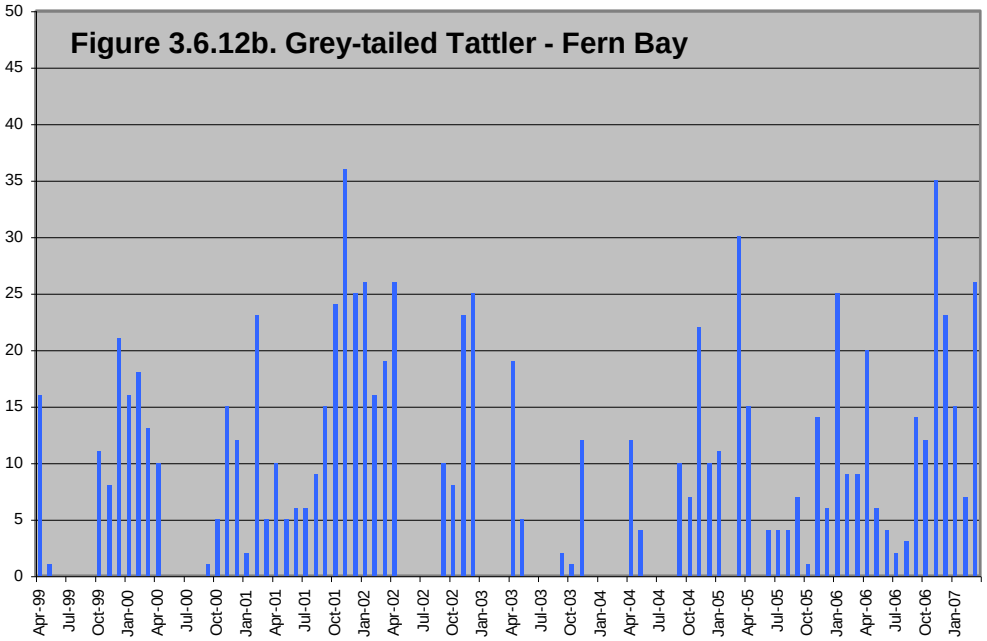


Figure 3.6.12b. Grey-tailed Tattler - Fern Bay
50
45
40
35
30
25
20
15
10
5
0
Apr-99
Jul-99
Oct-99
Jan-00
Apr-00
Jul-00
Oct-00
Jan-01
Apr-01
Jul-01
Oct-01
Jan-02
Apr-02
Jul-02
Oct-02
Jan-03
Apr-03
Jul-03
Oct-03
Jan-04
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Jul-04
Oct-04
Jan-05
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Jul-05
Oct-05
Jan-06
Apr-06
Jul-06
Oct-06
Jan-07

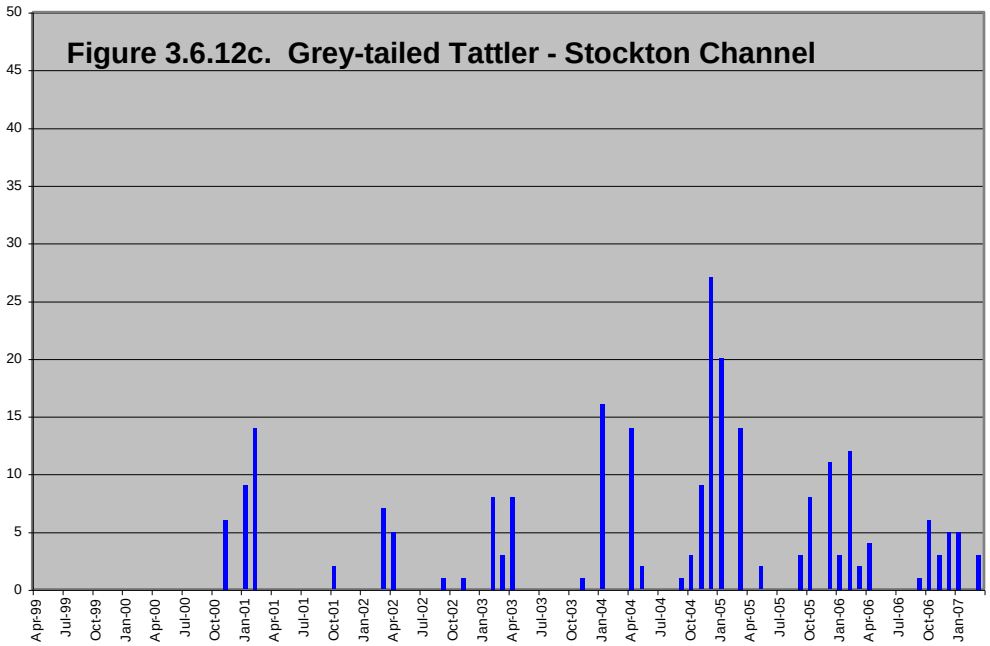


Figure 3.6.12c. Grey-tailed Tattler - Stockton Channel
50
45
40
35
30
25
20
15
10
5
0
Apr-99
Jul-99
Oct-99
Jan-00
Apr-00
Jul-00
Oct-00
Jan-01
Apr-01
Jul-01
Oct-01
Jan-02
Apr-02
Jul-02
Oct-02
Jan-03
Apr-03
Jul-03
Oct-03
Jan-04
Apr-04
Jul-04
Oct-04
Jan-05
Apr-05
Jul-05
Oct-05
Jan-06
Apr-06
Jul-06
Oct-06
Jan-07

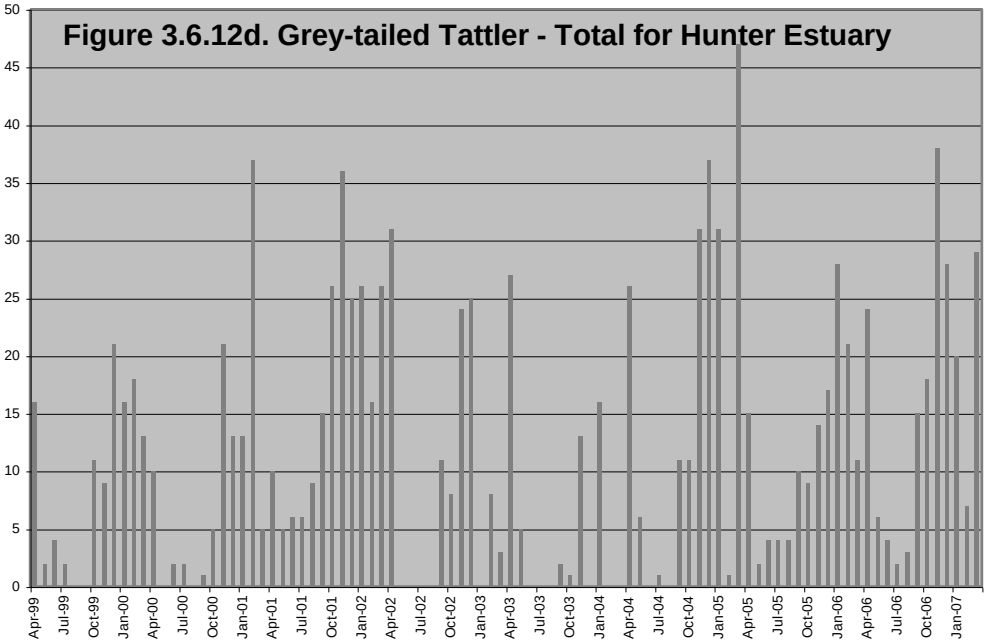


Figure 3.6.12d. Grey-tailed Tattler - Total for Hunter Estuary
50
45
40
35
30
25
20
15
10
5
0
Apr-99
Jul-99
Oct-99
Jan-00
Apr-00
Jul-00
Oct-00
Jan-01
Apr-01
Jul-01
Oct-01
Jan-02
Apr-02
Jul-02
Oct-02
Jan-03
Apr-03
Jul-03
Oct-03
Jan-04
Apr-04
Jul-04
Oct-04
Jan-05
Apr-05
Jul-05
Oct-05
Jan-06
Apr-06
Jul-06
Oct-06
Jan-07

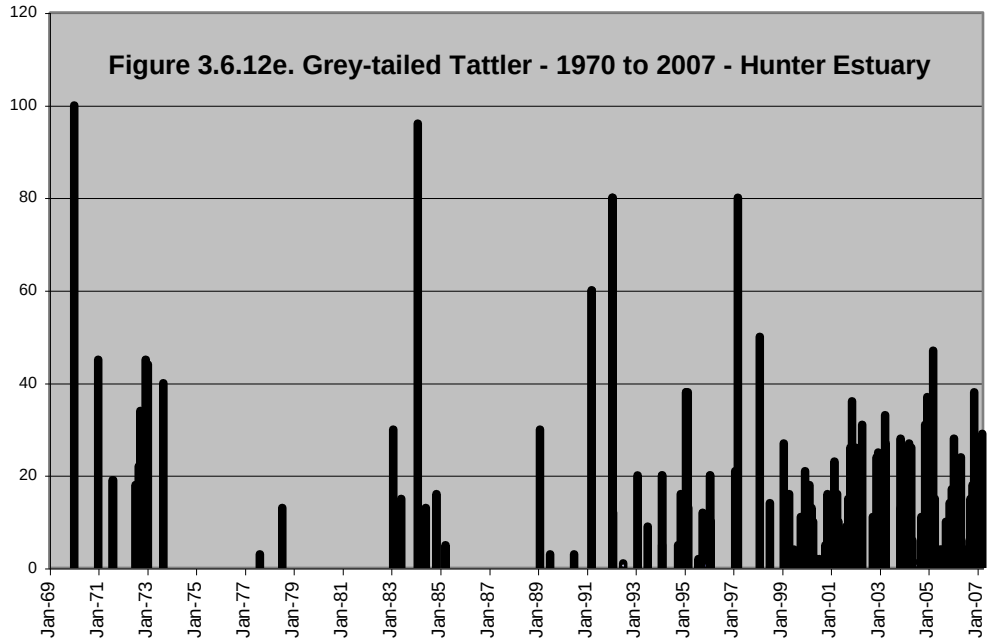


Figure 3.6.12e. Grey-tailed Tattler - 1970 to 2007 - Hunter Estuary
120
100
80
60
40
20
0
Jan-69
Jan-71
Jan-73
Jan-75
Jan-77
Jan-79
Jan-81
Jan-83
Jan-85
Jan-87
Jan-89
Jan-91
Jan-93
Jan-95
Jan-97
Jan-99
Jan-01
Jan-03
Jan-05
Jan-07

### 3.6.13 Wandering Tattler

A single Wandering Tattler was observed at Fern Bay roosting with Grey-tailed Tattlers during December 1999.

*Status:* Accidental summer migrant. Breeds in the northern hemisphere.

### 3.6.14 Ruddy Turnstone

Ruddy Turnstones are found mainly on coastal rock platforms and beaches. However, they also forage and roost immediately upstream of Nobbys Breakwater at Stony Point at the mouth of the Hunter River, usually in small numbers. Ruddy Turnstones begin arriving in the Hunter Estuary in September (**Figure 3.6.14c**). During 2007 their last recorded presence in the estuary was on 18 April. Up to 14 birds were present during the summer of 2006/07. Only a few Ruddy Turnstones sometimes over-winter at Stony Point and on the Newcastle Rock Platform. They are most often observed roosting at Stony Point and, outside the estuary, on the Newcastle Rock Platform near the Ocean Baths. Sometimes, a few birds fly up the estuary to roost at Stockton Channel or on the Kooragang Dykes. They may also forage at these locations and on nearby oyster banks.

*Recorded at:*

Kooragang Dykes (6), roosting
Stockton Channel (3), roosting and foraging
Stockton Sandspit (1)
Stony Point (14), roosting and foraging
Swan Pond (1), rare observation
Throsby Creek (10)

*Status:* Uncommon summer migrant. Breeds in the northern hemisphere. HBOC shorebird surveys since 1999 have recorded no more than six Ruddy Turnstones within the estuary proper. However, as many as 14 have been recorded roosting and foraging at Stony Point, just within the estuary (Judi Thomas pers. comm.), but this locality has only recently been regularly monitored. Thus it is difficult to be certain regarding trends in population since the 1970s as counts of Ruddy Turnstones have been very sparse between then and now.

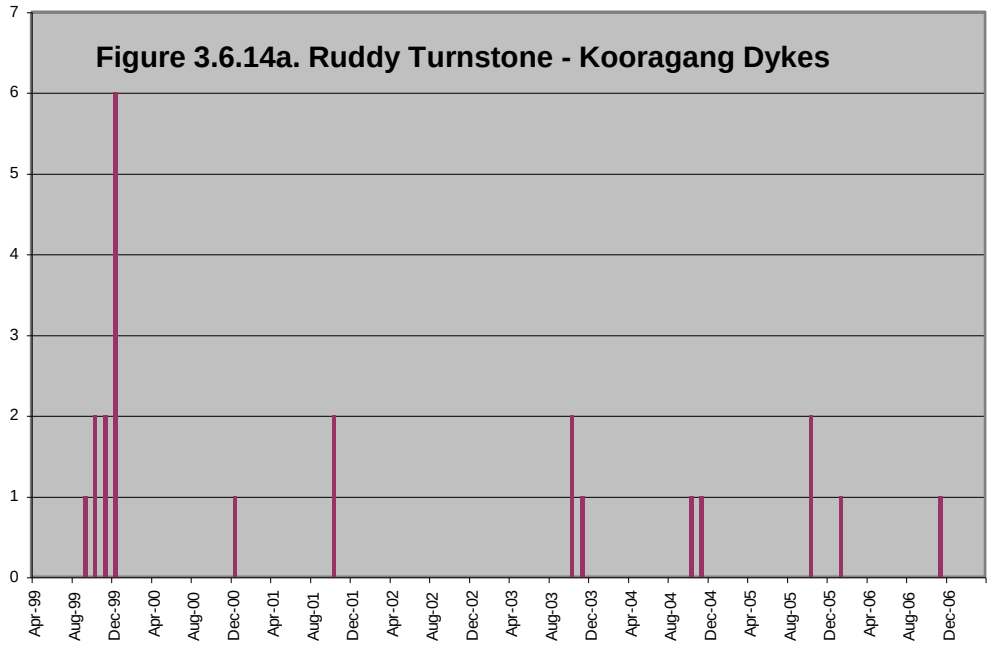


Figure 3.6.14a. Ruddy Turnstone - Kooragang Dykes
0
1
2
3
4
5
6
7
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

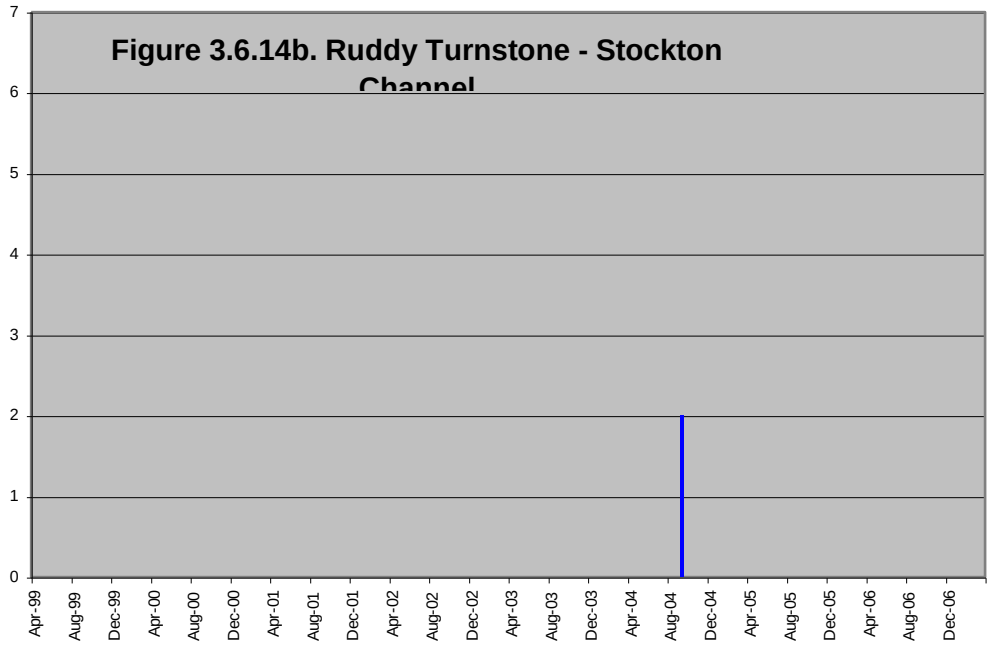


Figure 3.6.14b. Ruddy Turnstone - Stockton Channel
0
1
2
3
4
5
6
7
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

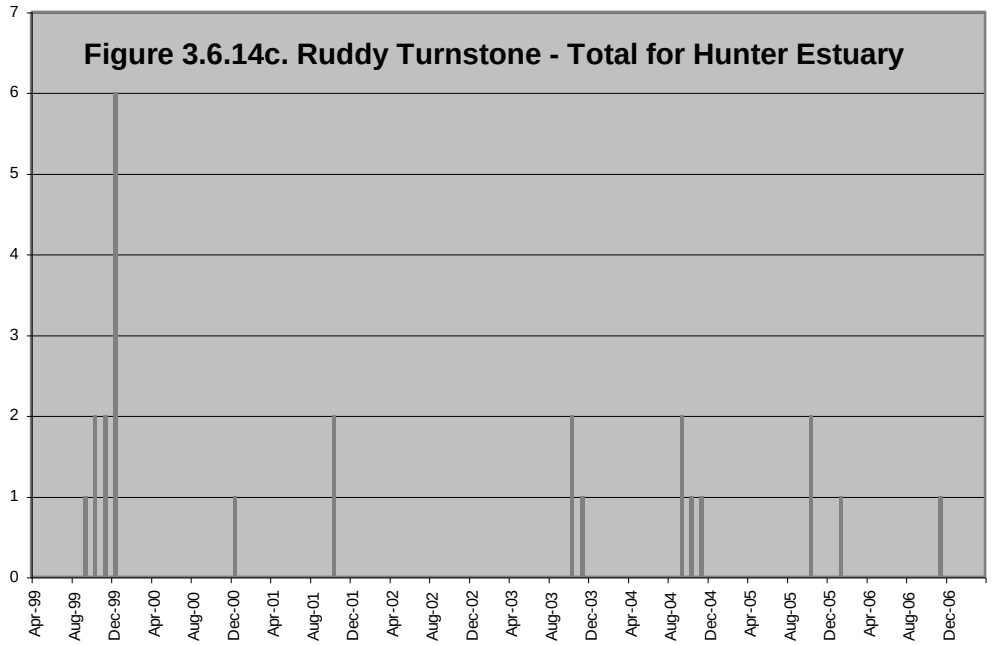


Figure 3.6.14c. Ruddy Turnstone - Total for Hunter Estuary
0
1
2
3
4
5
6
7
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

### 3.6.15 Asian Dowitcher

No records from 1993 to 2007.

*Status:* Accidental summer migrant. Breeds in the northern hemisphere.

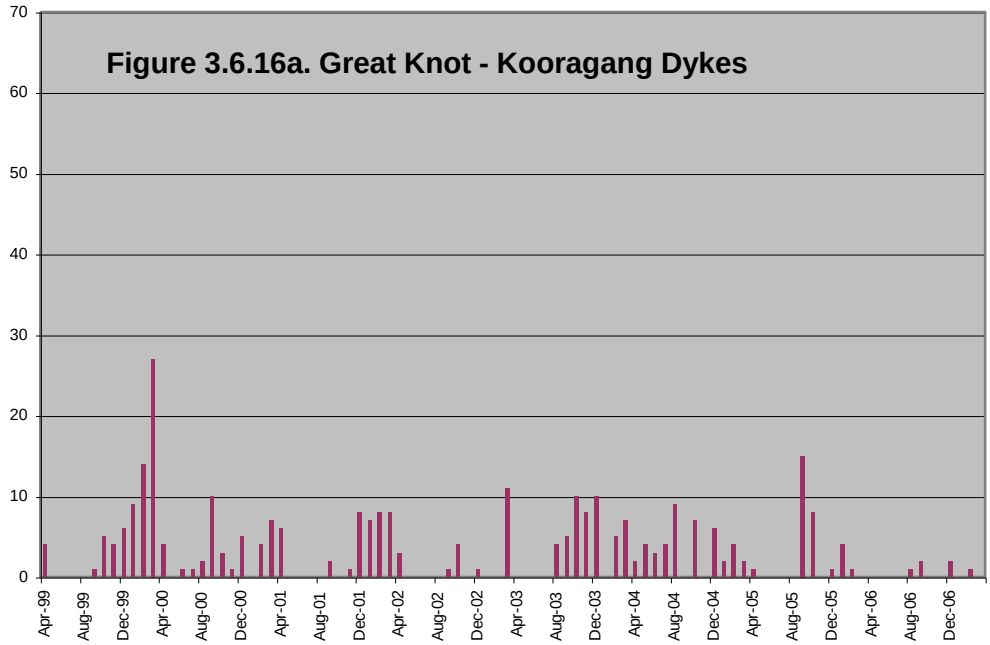
### 3.6.16 Great Knot

Great Knots are found in saline habitats along the North Arm of the Hunter River, usually in small numbers. They begin arriving in the Hunter Estuary during September and depart during the following April. A maximum of two birds was present during the summer of 2006/07. Great Knot sometimes over-winter in the Hunter Estuary in small numbers, usually less than four. They are most often observed roosting at Stockton Sandspit and the Kooragang Dykes (**Figures 3.6.16a** and **3.6.16b**).

*Recorded at:*

Fullerton Cove, foraging
Kooragang Dykes (27), roosting
North Arm Sandflats, foraging
Stockton Sandspit (50), roosting and foraging

*Status:* Uncommon summer migrant. Breeds in the northern hemisphere. HBOC's monthly shorebird monitoring shows that maximum summer counts and frequency of occurrence have decreased since 2002/03. The exceptional counts of as many as 60 Great Knots from October 2002 and October 2003 coincide with the rehabilitation of Stockton Sandspit (**Figures 3.6.16b** and **3.6.16 c**). Occasional peak counts in 1997 and 2003 are similar to peak counts during the 1970s (**Figure 3.6.16d**). Therefore, there is no clear trend over time for this species in the Hunter Estuary.



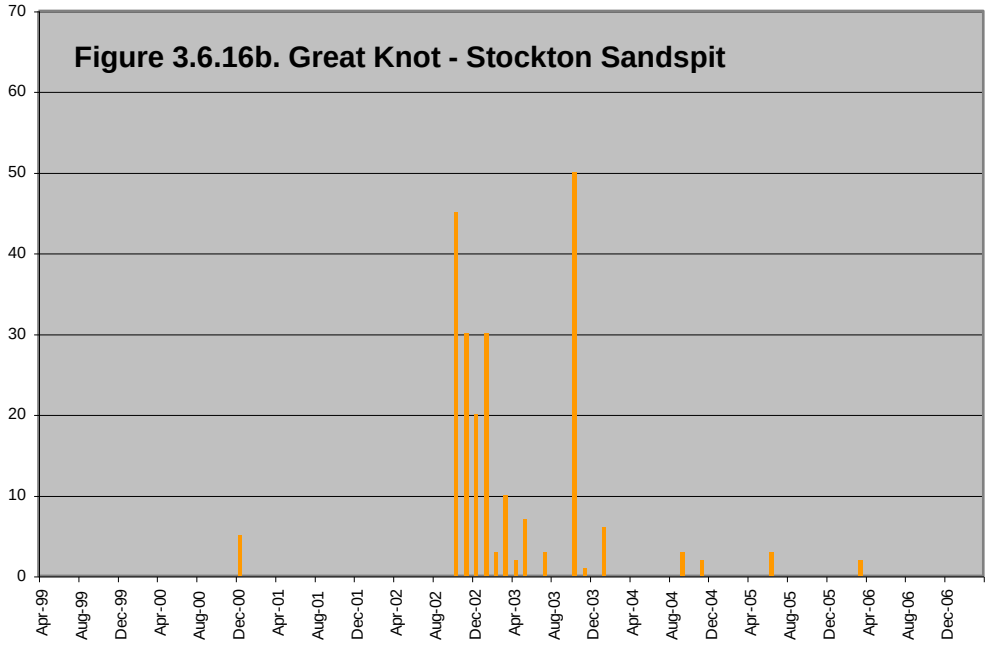


Figure 3.6.16b. Great Knot - Stockton Sandspit
70
60
50
40
30
20
10
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

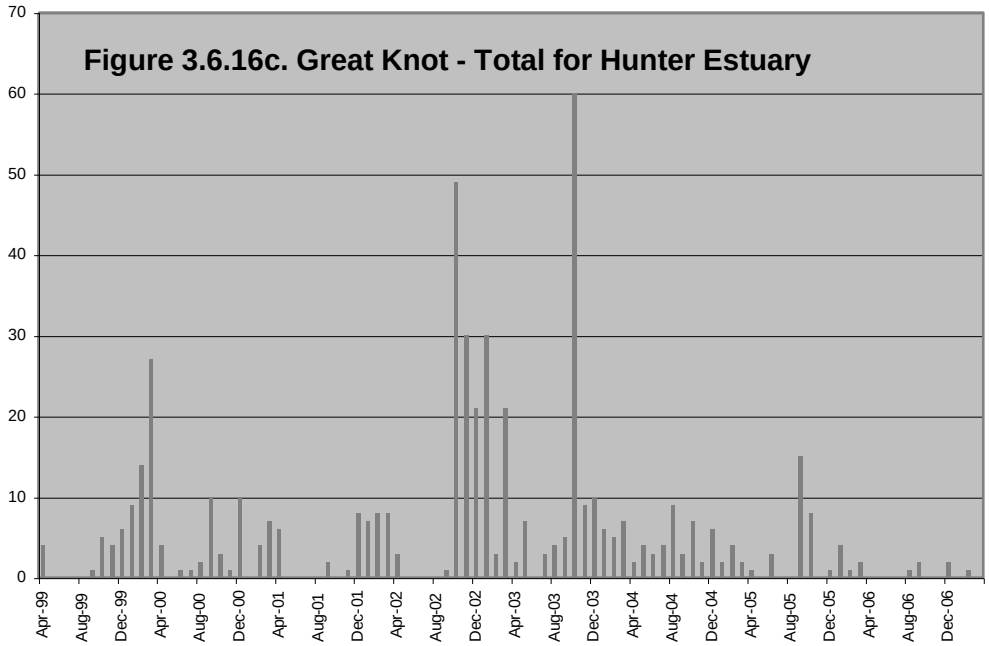


Figure 3.6.16c. Great Knot - Total for Hunter Estuary
70
60
50
40
30
20
10
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

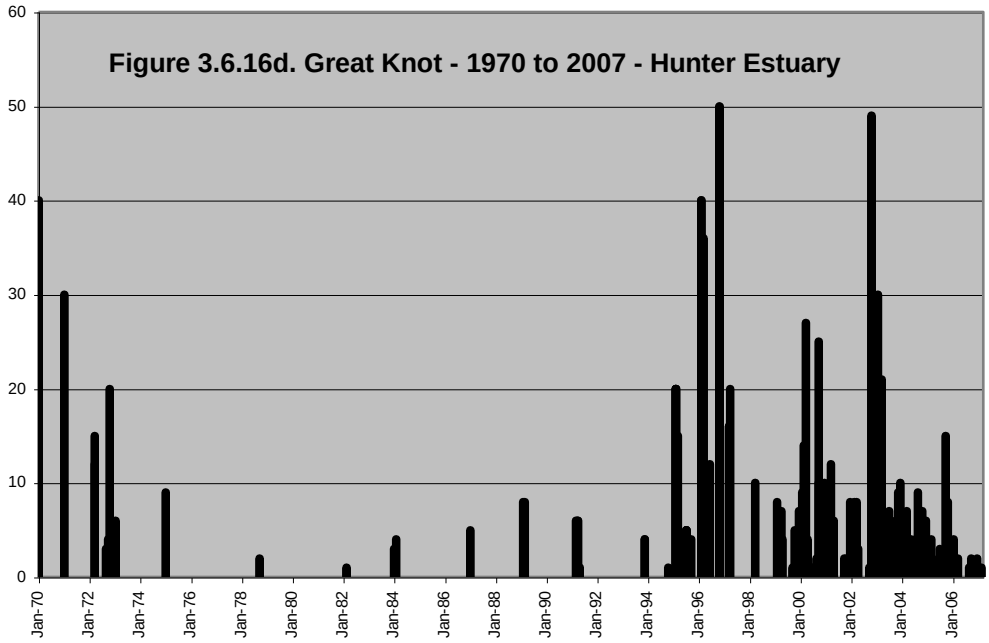


Figure 3.6.16d. Great Knot - 1970 to 2007 - Hunter Estuary
60
50
40
30
20
10
0
Jan-70
Jan-72
Jan-74
Jan-76
Jan-78
Jan-80
Jan-82
Jan-84
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06

### 3.6.17 Red Knot

Red Knot are found in saline habitats along the North Arm of the Hunter River and in ponds on Ash Island, often in very large numbers. Large influxes of Red Knot, sometimes as many as 1,669, begin to arrive in the estuary during September (**Figure 3.6.17d**). They forage for a short time and then most of the birds pass on to Victoria by the end of October. The birds remaining in the estuary, usually much less than 100, depart from as early as January to as late as April. Red Knot sometimes over-winter in the Hunter Estuary in small numbers, usually less than ten. They are most often observed roosting at the Kooragang Dykes and, in smaller numbers, at Stockton Sandspit and occasionally at Fullerton Cove Beach (**Figures 3.6.18a, 3.6.18b** and **3.6.18c**). They are infrequently observed on Ash Island, but an exceptional number of 1,427 birds was present there during the summer of 2006/07. They forage on mudflats around Stockton Sandspit, North Arm Sandflats, Fullerton Cove and, occasionally, Ash Island.

*Recorded at:*

Big Pond (4)
Fern Bay (4)
Fullerton Cove, foraging
Fullerton Cove Beach (180)
Kooragang Dykes (1,110) roosting
Milhams Pond (1,669), foraging
North Arm Sandflats
Stockton Sandspit (200), roosting and foraging
Swan Pond (20+), rare observation

*Status:* Summer migrant. Breeds in the northern hemisphere. Most Red Knot use the Hunter Estuary as a staging point to rest and replenish their fat resources before continuing on their southward migration. The peak count of 1,669 birds at Milhams Pond, listed above, was recorded outside the usual monthly shorebird count (Ann Lindsey pers. comm.). The peak Hunter Estuary count of 1,472 birds shown on **Figure 3.6.17d** was caused by a large influx of 1,162 Red Knot encountered at Ash Island (Area E) during a regular monthly wader count (not shown as a separate graph herein). It is probable that HBOC's monthly shorebird monitoring rarely encounters the maximum influx each spring. Historical data appears to show that peak counts have increased since the 1970s (**Figure 3.6.17e**). However, early counts did not always include locations on Ash Island where maximum numbers are often encountered.

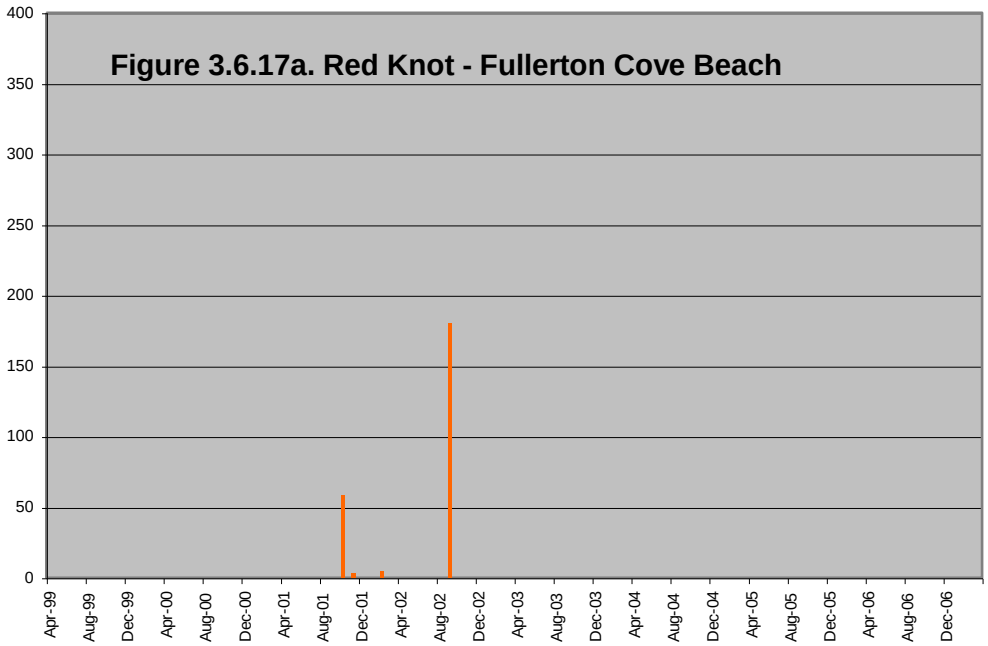


Figure 3.6.17a. Red Knot - Fullerton Cove Beach
400
350
300
250
200
150
100
50
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

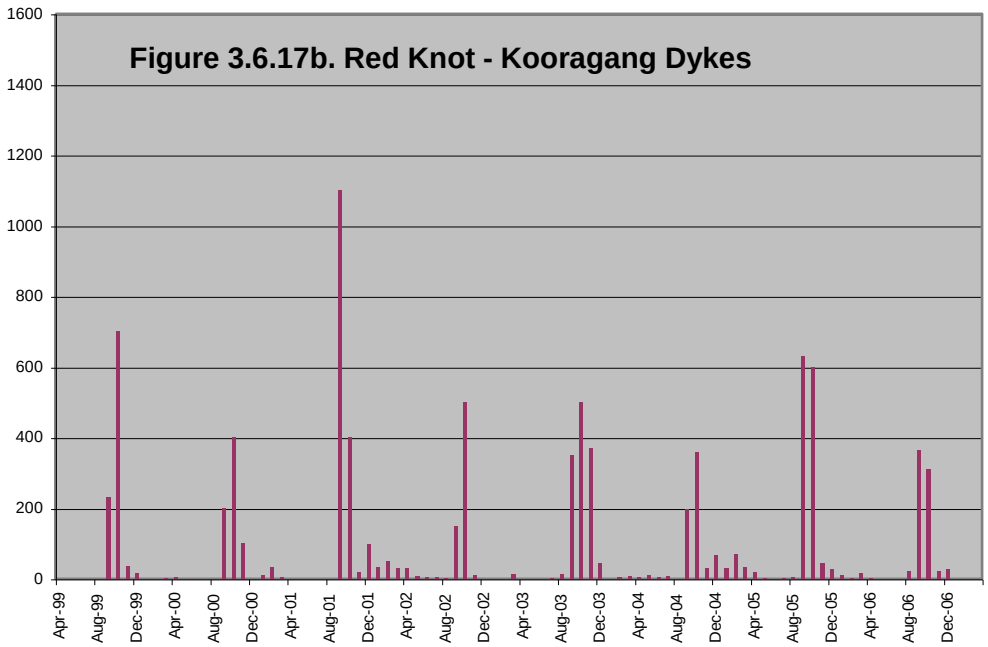


Figure 3.6.17b. Red Knot - Kooragang Dykes
1600
1400
1200
1000
800
600
400
200
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
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Apr-04
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Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

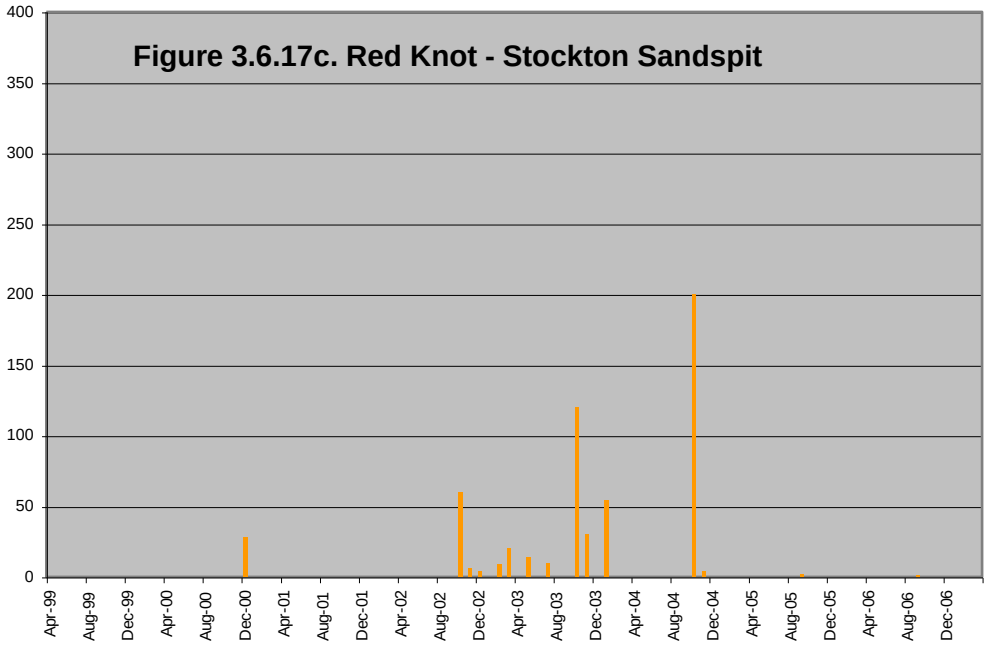
Figure 3.6.17c. Red Knot - Stockton Sandspit
400
350
300
250
200
150
100
50
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
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Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

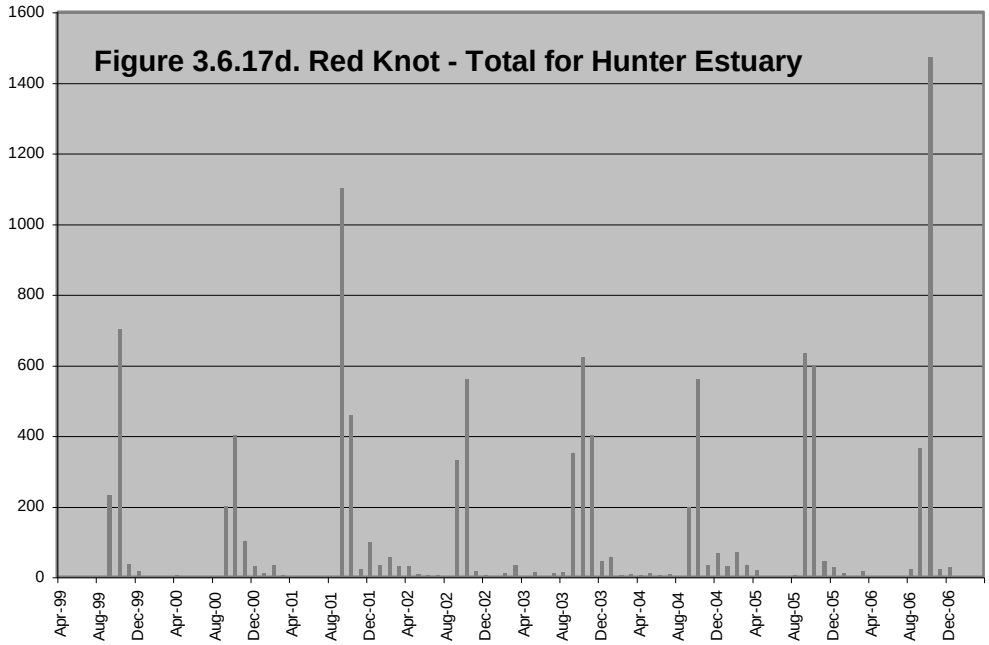


Figure 3.6.17d. Red Knot - Total for Hunter Estuary
1600
1400
1200
1000
800
600
400
200
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

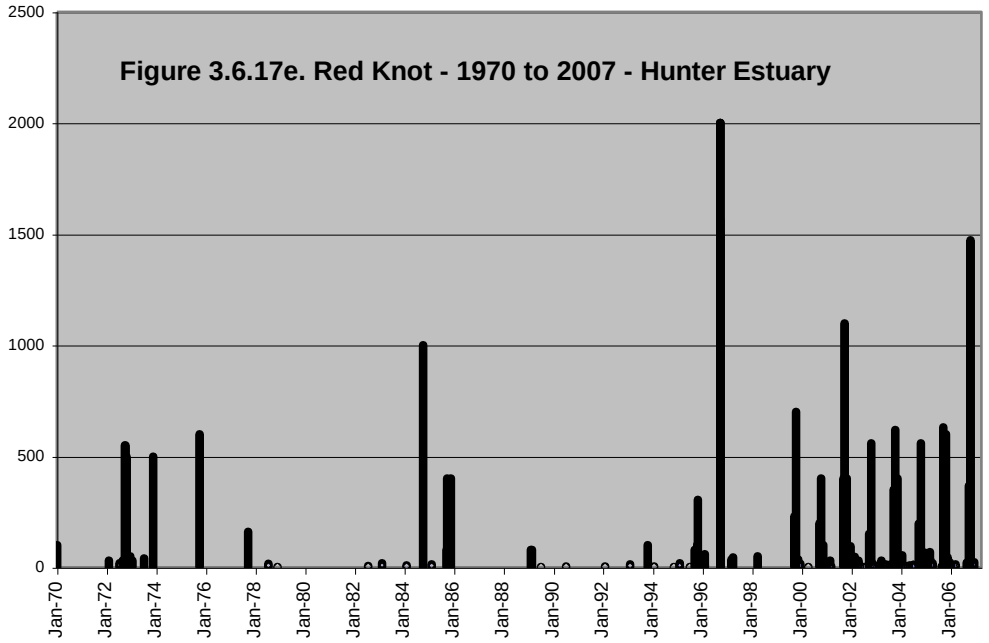


Figure 3.6.17e. Red Knot - 1970 to 2007 - Hunter Estuary
2500
2000
1500
1000
500
0
Jan-70
Jan-72
Jan-74
Jan-76
Jan-78
Jan-80
Jan-82
Jan-84
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06

### 3.6.18 Sanderling

Sanderlings generally forage on ocean beaches in the Hunter Region and the closest they have been reported to the Hunter Estuary is Stockton Beach.

*Status:* Rare. Breeds in the northern hemisphere. Not recorded from the Hunter Estuary.

### 3.6.19 Red-necked Stint

Red-necked Stints are found mainly in saline habitats along the North Arm of the Hunter River and in ponds on Ash Island, usually in moderate numbers (**Figure 3.6.19d**). They can also be found in small numbers at freshwater wetlands. Red-necked Stints begin arriving, sometimes as early as late August, but usually September to October and then depart anytime from late February to April. A maximum of 72 birds was recorded during 2006/07. Red-necked Stints sometimes over-winter in the Hunter Estuary in small numbers (up to 26). They are most often observed at the Kooragang Dykes, Ash Island, Stockton Sandspit, Deep Pond and Stockton Channel. (**Figures 3.6.19a, 3.6.19b** and **3.6.19c**). They forage mainly on mudflats around Stockton Sandspit, North Arm Sandflats, Fullerton Cove and Ash Island. Small numbers have also been recorded on freshwater wetlands.

*Recorded at:*

Ash Island (71), roosting and foraging
Bedminster Swamp (1-5)
Big Pond (67), foraging
Deep Pond (122), foraging
Fish Fry Flats
Fullerton Cove, foraging
Hexham Swamp (1-5)
Irrawang Swamp(1-5)
Kooragang Dykes (91), roosting
Milhams Pond
North Arm Sandflats (20), foraging
Pambalong Nature Reserve (1-5).
Phoenix Flats (33), foraging
Stockton Channel (4), roosting
Stockton Sandspit (49), roosting and foraging
Swan Pond (260), roosting and foraging
Teal Waters
Wader Pond (100), roosting and foraging

*Status:* Summer migrant. Breeds in the northern hemisphere. HBOC's monthly shorebird monitoring showed that maximum summer counts decreased from 144 during1999/2000, to 72 by 2006/07 (**Figure 3.6.19d**). It is evident that historically numbers have decreased from more than 500 during the early 1970s to less than 100 today (**Figure 3.6.19e**).

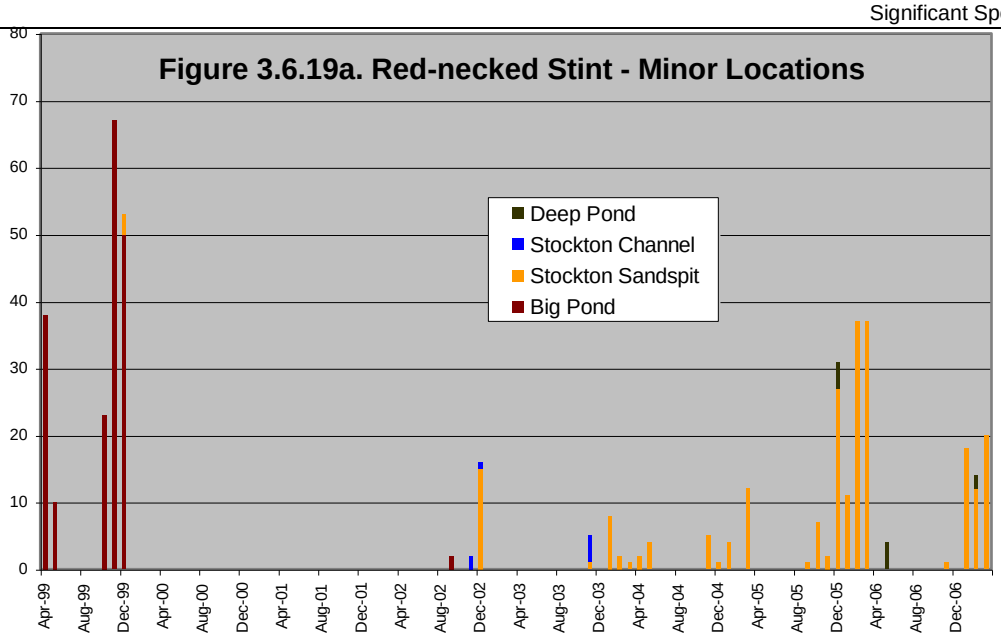


Figure 3.6.19a. Red-necked Stint - Minor Locations
Deep Pond
Stockton Channel
Stockton Sandspit
Big Pond
0
10
20
30
40
50
60
70
80
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

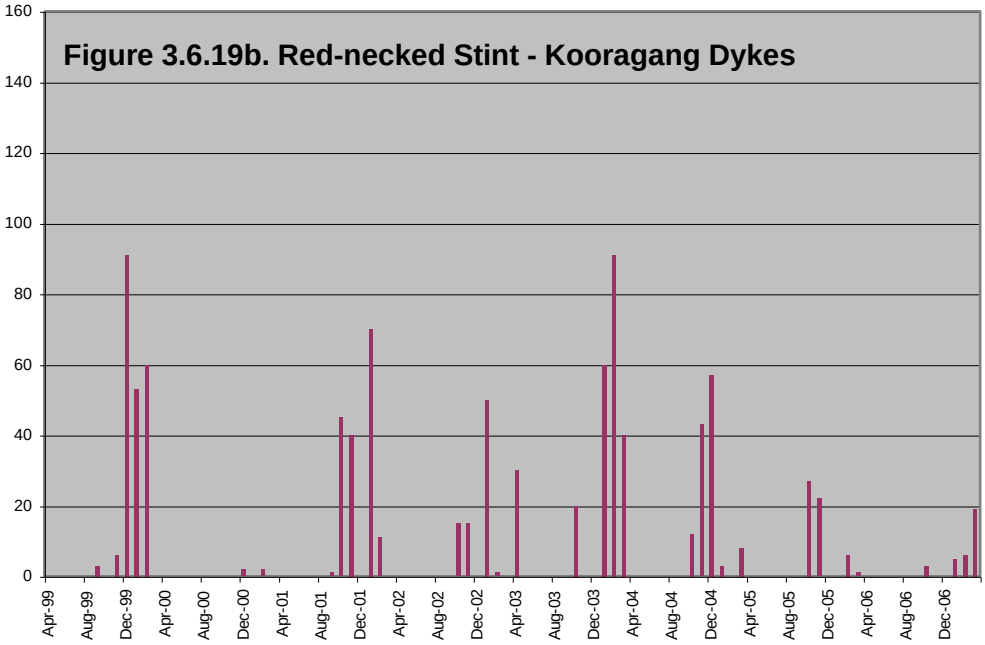


Figure 3.6.19b. Red-necked Stint - Kooragang Dykes
0
20
40
60
80
100
120
140
160
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

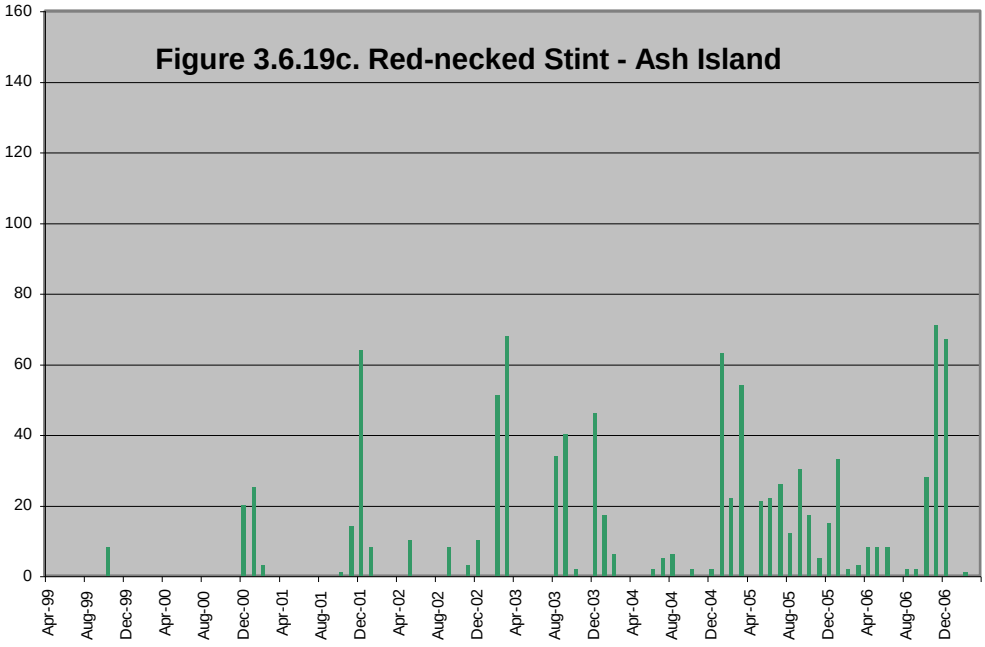


Figure 3.6.19c. Red-necked Stint - Ash Island
0
20
40
60
80
100
120
140
160
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

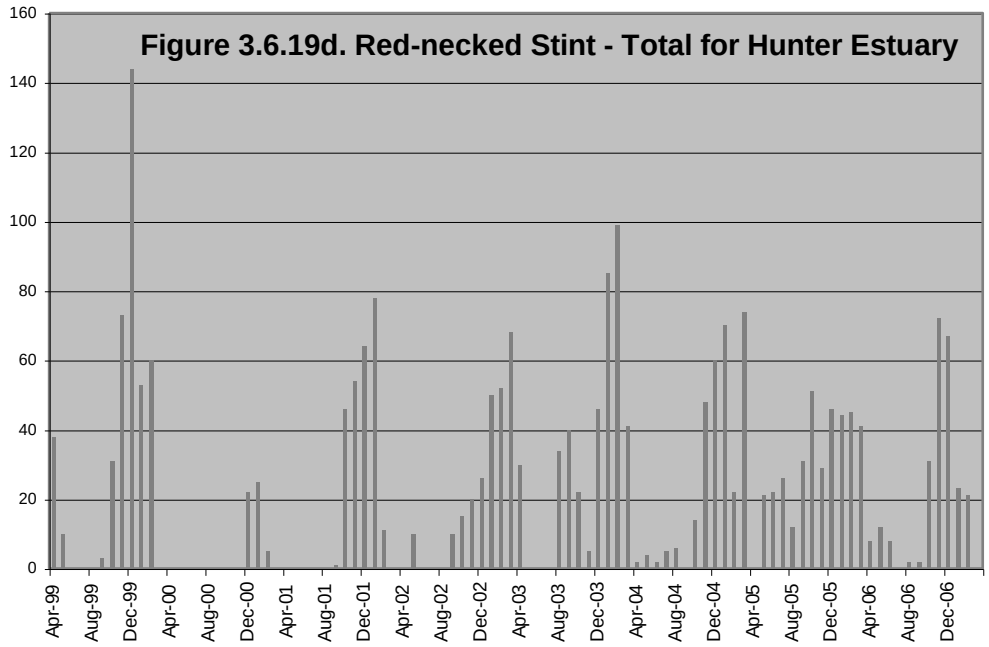


Figure 3.6.19d. Red-necked Stint - Total for Hunter Estuary
160
140
120
100
80
60
40
20
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

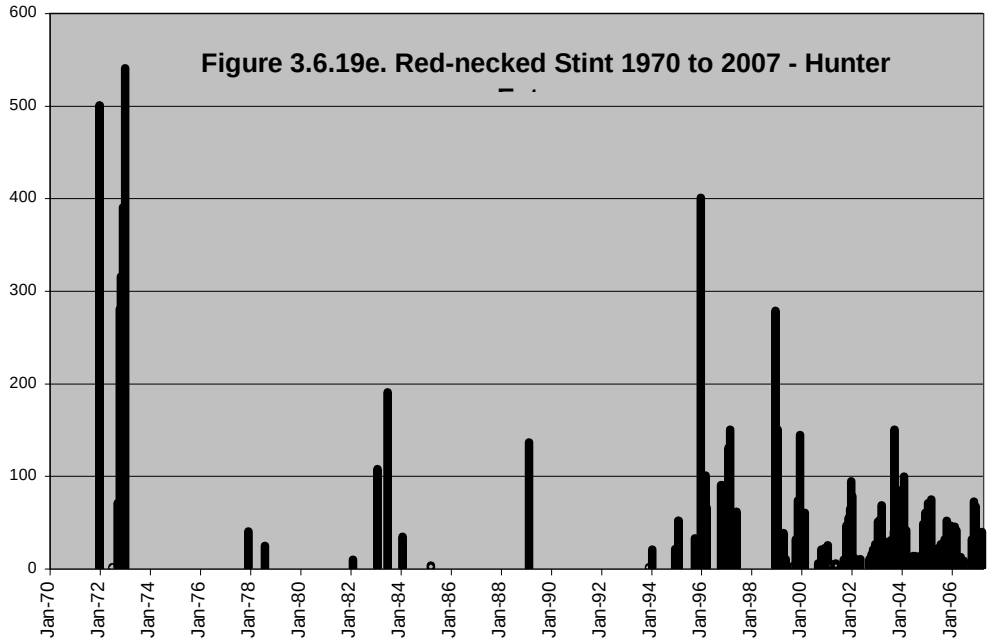


Figure 3.6.19e. Red-necked Stint 1970 to 2007 - Hunter
600
500
400
300
200
100
0
Jan-70
Jan-72
Jan-74
Jan-76
Jan-78
Jan-80
Jan-82
Jan-84
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06

### 3.6.20 Long-toed Stint

A single Long-toed Stint was recorded on Wader Pond at Ash Island during 2003.

*Status:* Rare. Breeds in the northern hemisphere.

### 3.6.21 Pectoral Sandpiper

Pectoral Sandpipers are rarely recorded in the Hunter Estuary. However, because they are very similar to the more numerous Sharp-tailed Sandpipers they can be overlooked.

*Recorded at:*

Big Pond (7)
Deep Pond (1)
Hunter Wetlands Centre (1-2)
Newcastle Wetlands Reserve, during the 1970s and early 80s
Swan Pond (1)
Wader Pond (1)

*Status:* Rare. Breeds in the northern hemisphere.

### 3.6.22 Sharp-tailed Sandpiper

Sharp-tailed Sandpipers are found throughout the Hunter Estuary in both fresh and saltwater habitats, often in large numbers. They begin arriving during September and depart from March to April (**Figure 3.6.22d**). A maximum of 688 birds was recorded during 2006/07. Sharp-tailed Sandpipers rarely over-winter in the Hunter Estuary. They forage mainly on Ash Island ponds (1,172) (Swan and Wader Ponds), Deep Pond, and at several freshwater swamps.

*Recorded at:*

Ash Island ponds (1,172)
Bedminster Swamp (32)
Big Pond (300)
Deep Pond (600)
Fern Bay (20)
Fish Fry Flats (30)
Hexham Swamp (1,800)
Hunter Wetlands Centre (160)
Irrawang Swamp (132)
Kooragang Dykes (225)
Lenaghans Wetland (400+)
Melaleuca Swale (36)
Milhams Pond (450)
Newline Road Swamp (60), prior to hydrological changes
Pambalong Nature Reserve (700)
Phoenix Flats
Sharpies Flat (104)
Stockton Sandspit (480)
Swan Pond (1,482)
Tarro Swamp (200+)
Teal Waters (75)
Wader Pond (696)

*Status:* Usual summer migrant. Breeds in the northern hemisphere. HBOC's monthly shorebird monitoring showed that maximum summer counts decreased from about 1,200 birds during 2001/02, to about half that figure during 2006/07 (**Figure 3.6.22d**). In the past, a similar dramatic decline from a maximum of about 2,000 birds also took place from 1993 to 2000, indicating that these fluctuations may be a cyclical phenomenon (**Figure 3.6.22e**). Excluding these peak counts, the number of Sharp-tailed Sandpipers in the past was similar to numbers since 2001.

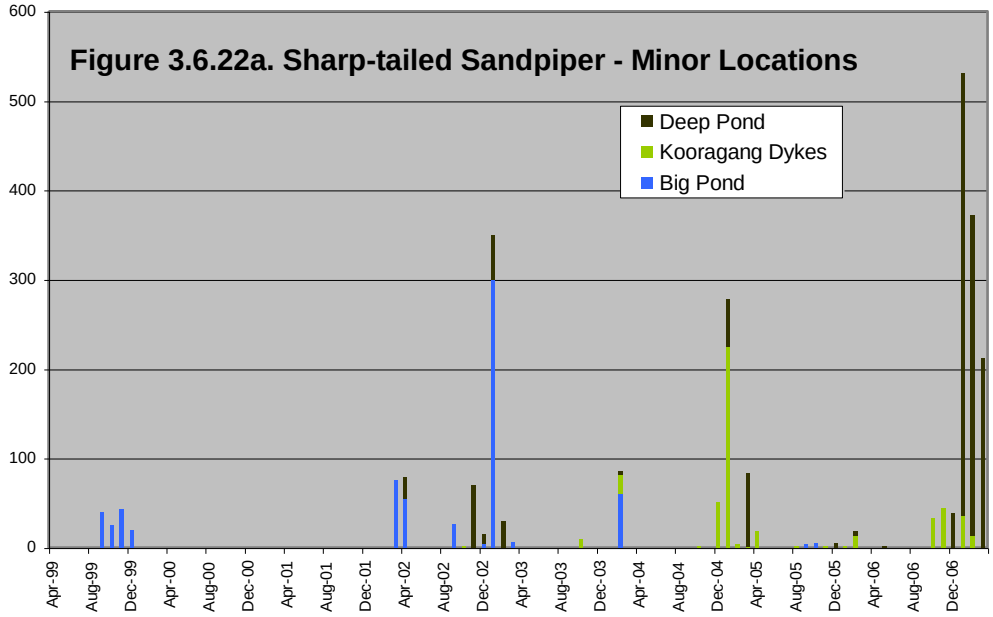


Figure 3.6.22a. Sharp-tailed Sandpiper - Minor Locations
Deep Pond
Kooragang Dykes
Big Pond
600
500
400
300
200
100
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

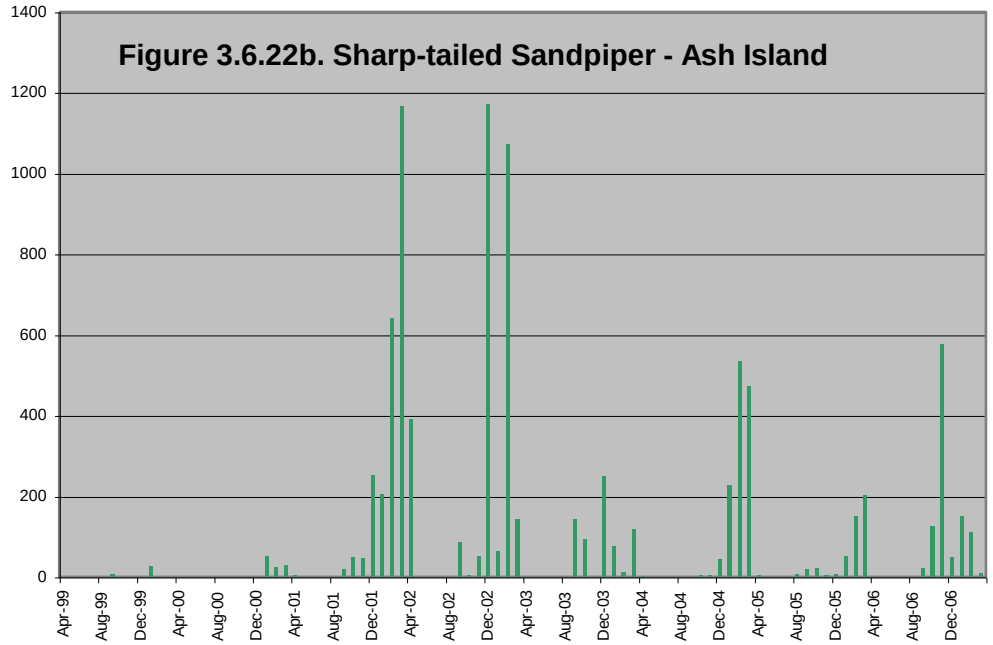


Figure 3.6.22b. Sharp-tailed Sandpiper - Ash Island
1400
1200
1000
800
600
400
200
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

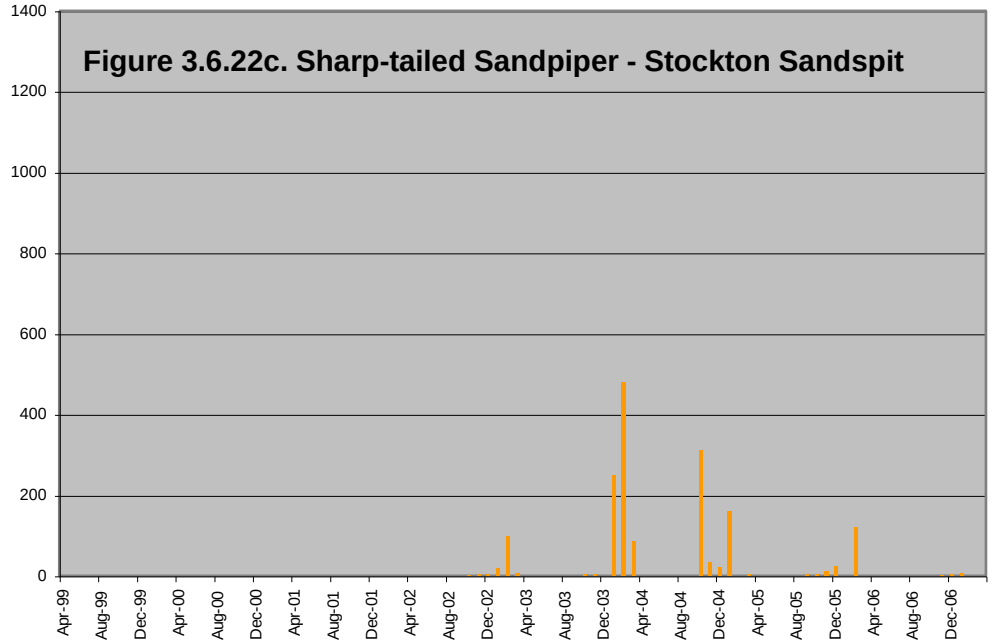
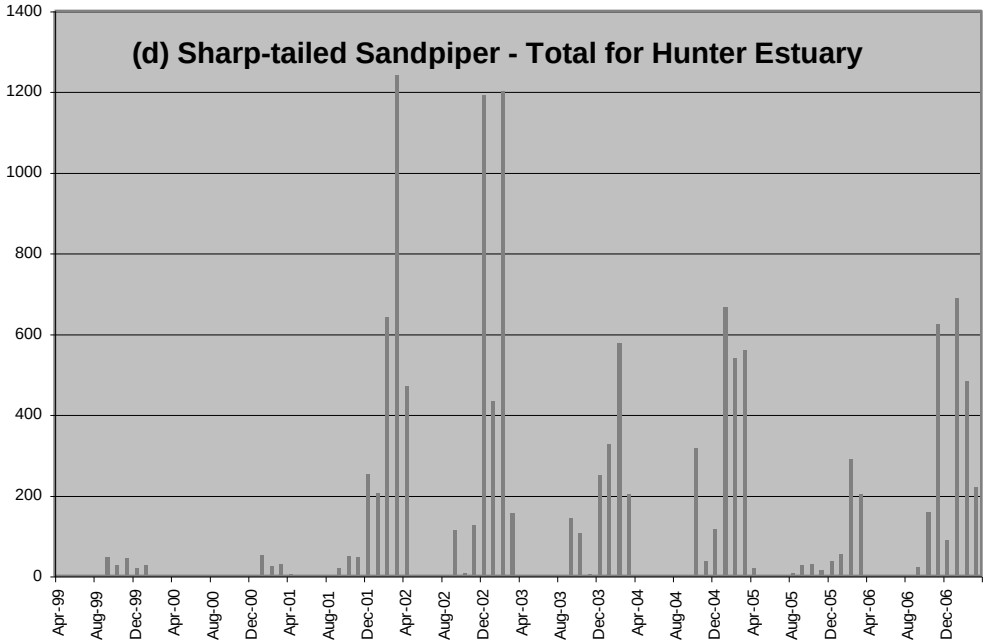


Figure 3.6.22c. Sharp-tailed Sandpiper - Stockton Sandspit
1400
1200
1000
800
600
400
200
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06


(d) Sharp-tailed Sandpiper - Total for Hunter Estuary
1400
1200
1000
800
600
400
200
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

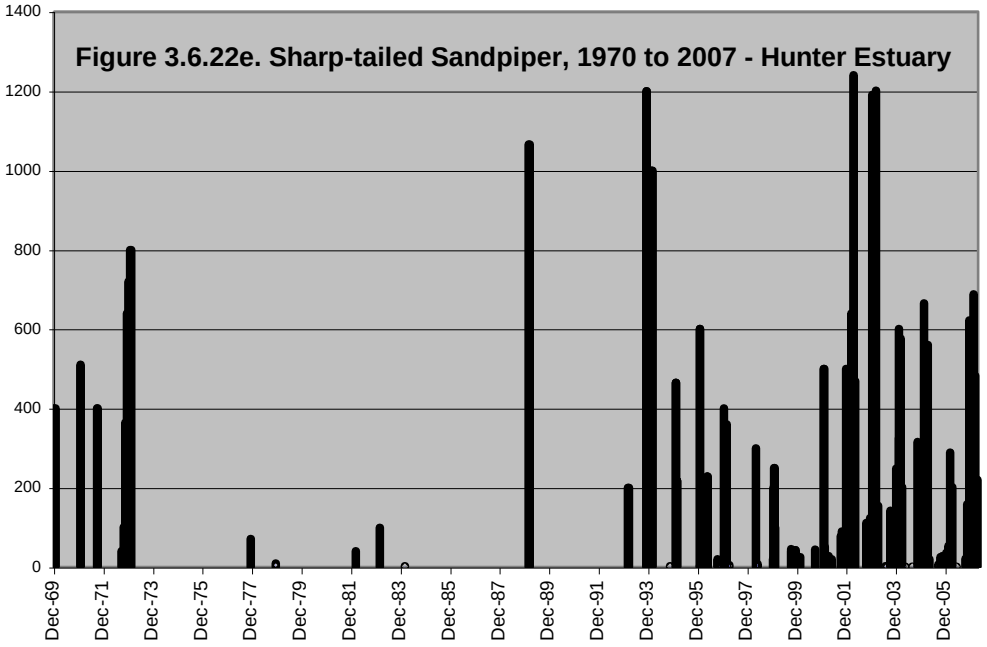


Figure 3.6.22e. Sharp-tailed Sandpiper, 1970 to 2007 - Hunter Estuary
1400
1200
1000
800
600
400
200
0
Dec-69
Dec-71
Dec-73
Dec-75
Dec-77
Dec-79
Dec-81
Dec-83
Dec-85
Dec-87
Dec-89
Dec-91
Dec-93
Dec-95
Dec-97
Dec-99
Dec-01
Dec-03
Dec-05

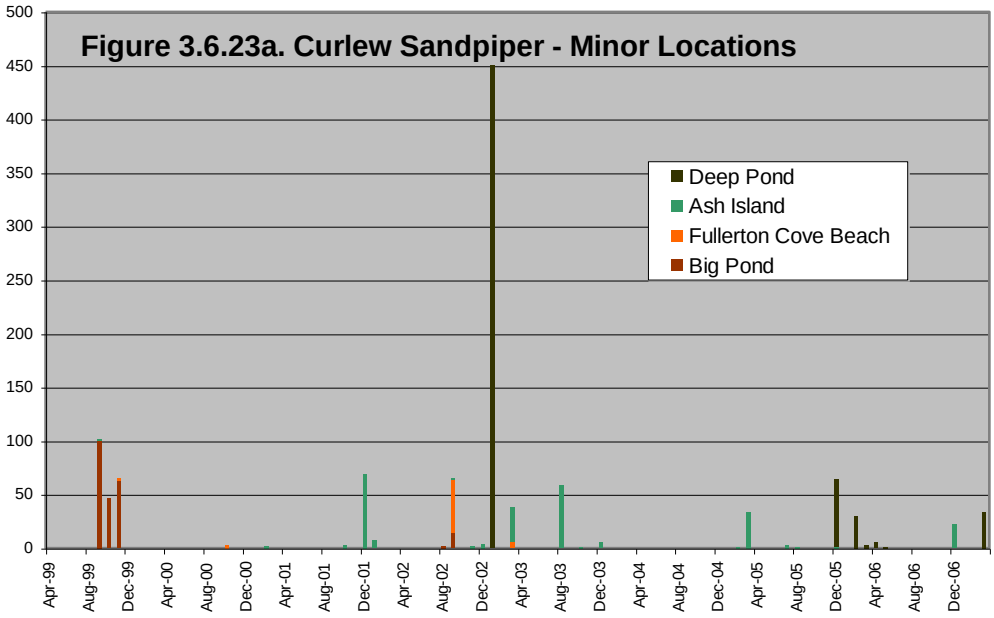
### 3.6.23 Curlew Sandpiper

Curlew Sandpipers are found throughout the Hunter Estuary mostly in saline habitats, and often in large numbers. They begin arriving as early as August and into September, and most of them have departed by mid-March (**Figure 3.6.23d**). During 2006/07 a maximum of 276 birds was recorded. Curlew Sandpipers rarely over-winter in the Hunter Estuary. They forage mainly on Ash Island ponds, Deep Pond, Fullerton Cove (1,500), North Arm Sandflats, Stockton Sandspit and in the past, at Big Pond.

*Recorded at:*

Ash Island (69)
Big Pond (200)
Deep Pond (450)
Fern Bay (50)
Fish Fry Flats
Fullerton Cove (1,500)
Fullerton Cove Beach (50)
Hunter Wetlands Centre (1-5)
Kooragang Dykes (461)
Melaleuca Swale
North Arm Sandflats (50), foraging
Pambalong Nature Reserve (6-20)
Sharpies Flat (1)
Stockton Sandspit (400)
Stockton Sewage Treatment Works (1,500, 1993), no longer viable
Throsby Creek (6-20)

*Status:* Common summer migrant. Breeds in the northern hemisphere. HBOC's monthly shorebird monitoring shows that the frequency of counts exceeding 200 birds decreased from 1999/2000 to 2006/07 particularly after an exceptional spike in numbers of up to 812 birds (**Figure 3.6.23d**). Historically, Curlew Sandpipers have suffered a serious decline in numbers from as many as 2,000 to 4,000 birds down to the present maximum of only 276 birds during the 2006/07 season (**Figure 3.6.23e**).



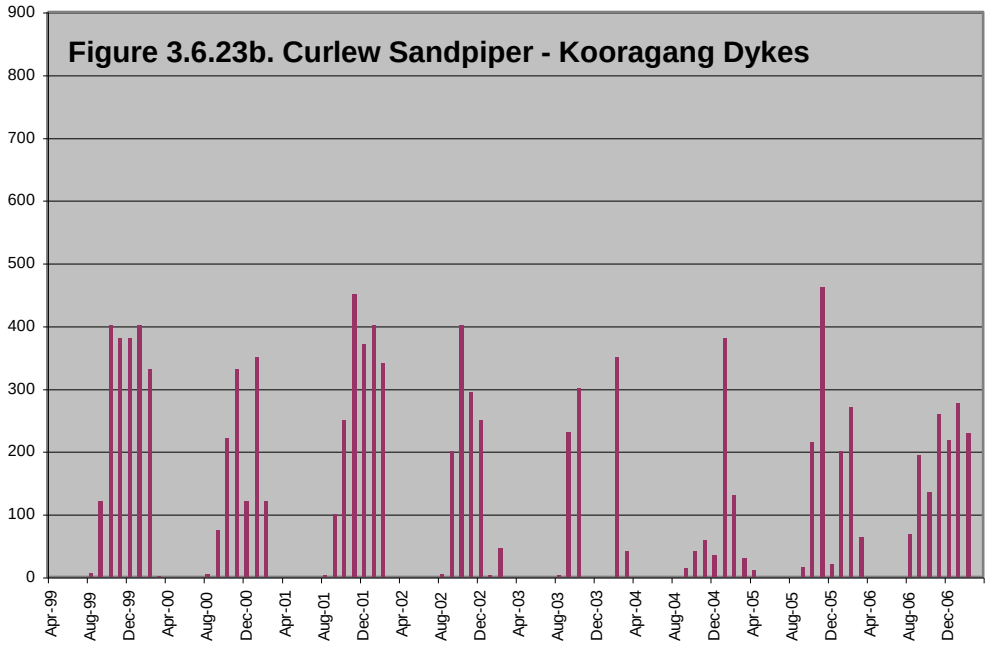


Figure 3.6.23b. Curlew Sandpiper - Kooragang Dykes
900
800
700
600
500
400
300
200
100
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

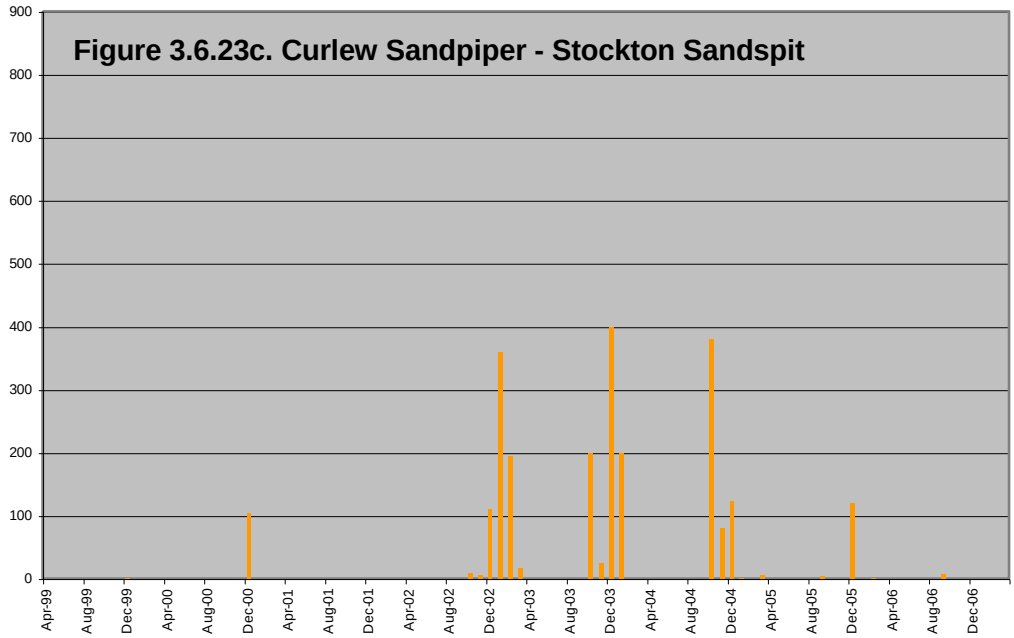
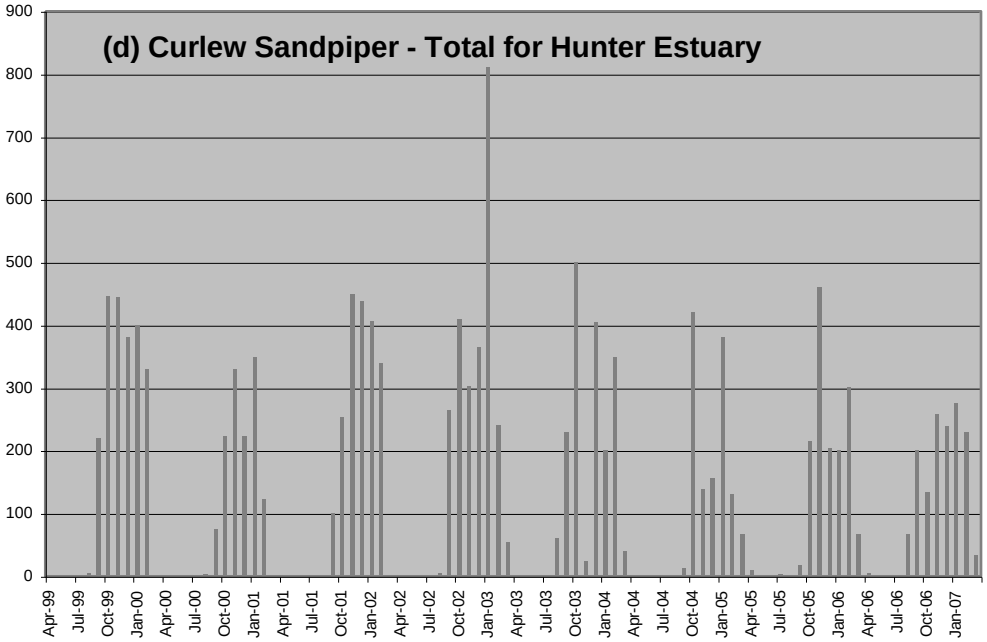


Figure 3.6.23c. Curlew Sandpiper - Stockton Sandspit
900
800
700
600
500
400
300
200
100
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06


(d) Curlew Sandpiper - Total for Hunter Estuary
900
800
700
600
500
400
300
200
100
0
Apr-99
Jul-99
Oct-99
Jan-00
Apr-00
Jul-00
Oct-00
Jan-01
Apr-01
Jul-01
Oct-01
Jan-02
Apr-02
Jul-02
Oct-02
Jan-03
Apr-03
Jul-03
Oct-03
Jan-04
Apr-04
Jul-04
Oct-04
Jan-05
Apr-05
Jul-05
Oct-05
Jan-06
Apr-06
Jul-06
Oct-06
Jan-07

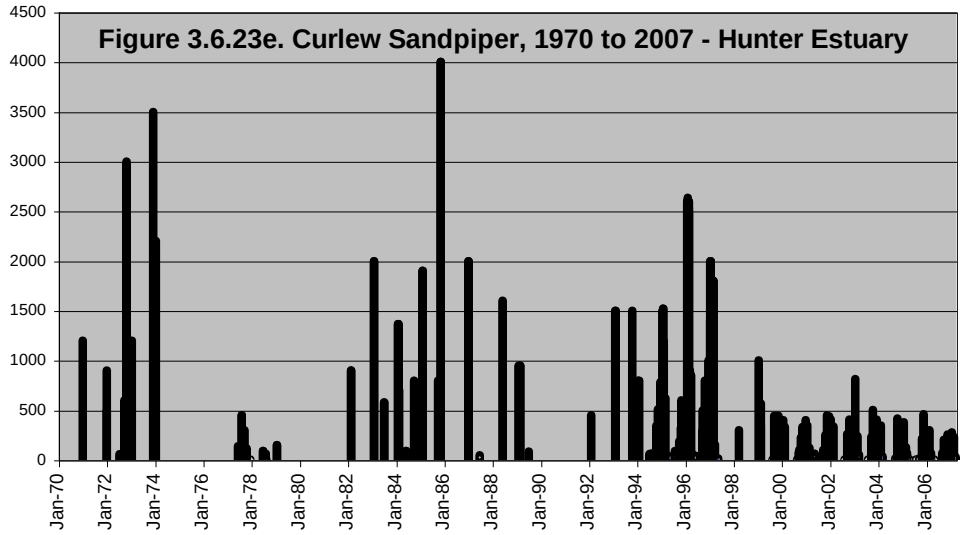


Figure 3.6.23e. Curlew Sandpiper, 1970 to 2007 - Hunter Estuary
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Jan-70
Jan-72
Jan-74
Jan-76
Jan-78
Jan-80
Jan-82
Jan-84
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06

### 3.6.24 Buff-breasted Sandpiper

A single Buff-breasted Sandpiper was recorded on Wader Pond and also on Swan Pond, Ash Island during February 2004. It was confirmed as only the 7th Australian record for this species.

*Status:* Accidental. Breeds in the northern hemisphere.

### 3.6.25 Broad-billed Sandpiper

Broad-billed Sandpipers are occasionally recorded as 1-4 birds. They have been recorded during late June/early July.

*Recorded at:*

Ash Island (2)
Fern Bay (1)
Fullerton Cove (2), foraging
Kooragang Island (2)
Stockton Sandspit (4)
Wader Pond (1)

*Status:* Accidental. Breeds in the northern hemisphere.

### 3.6.26 Ruff

Single Ruffs have occasionally been observed in the Hunter Estuary.

*Recorded at:*

Big Pond
Deep Pond
Stockton Sandspit
Swan Pond
Wader Pond

*Status:* Accidental. Breeds in the northern hemisphere.

## 3.6.27 Pacific Golden Plover

Pacific Golden Plovers mostly frequent the North Arm of the Hunter River and Ash Island. They begin to arrive in the Hunter Estuary during September and depart during April to early May. Pacific Golden Plovers do not over-winter. A maximum number of 304 birds was present during 2006/07 (**Figure 3.6.27d**). Most birds regularly roost at high tide at the Kooragang Dykes and lesser numbers at Stockton Channel. Occasional roosts are located at Sharpies Flat and Scotts Point. Nocturnal high-tide roosts are located at Windeyers Reach Nocturnal Roost, Stockton Dunes (diurnal as well) and, probably, saltmarsh northeast of Fullerton Cove. At neap low tides the plovers forage, roost and loaf at North Arm Sandflats and during spring low tides they move to Fullerton Cove to forage. On the rising tide the plovers forage and roost in the Kooragang Dykes Ponds. A small number of plovers forage in Stockton Channel, Ash Island Ponds and, in the past, at Big Pond.

*Recorded at:*

Ash Island ponds (77), foraging and roosting
Big Pond (24), foraging and roosting
Fern Bay (1)
Fullerton Cove, foraging
Kooragang Dykes (304), roosting
Kooragang Dyke Ponds, foraging
North Arm Sandflats (300), foraging and roosting
Northeast Fullerton Cove saltmarsh, nocturnal roost
Phoenix Flats
Scotts Point (54), roosting
Sharpies Flat (12), roosting
Stockton Channel (33), roosting and foraging
Stockton Dunes (100-200), nocturnal roost
Stockton Sandspit (28), roosting
Swan Pond (14), foraging and roosting
Teal Waters
Wader Pond (77), foraging and roosting
Windeyers Reach Nocturnal Roost

*Status:* Summer migrant. Breeds in the northern hemisphere. HBOC's monthly shorebird surveys indicate that numbers of Pacific Golden Plovers appear to have increased from a maximum of 88 during 1999/00 to a maximum of 304 during 2006/07. However, historically numbers have decreased significantly from between 370 and 800, recorded during the 1970s and 1980s, to the present number of generally less than 300 (**Figure 3.6.27e**).

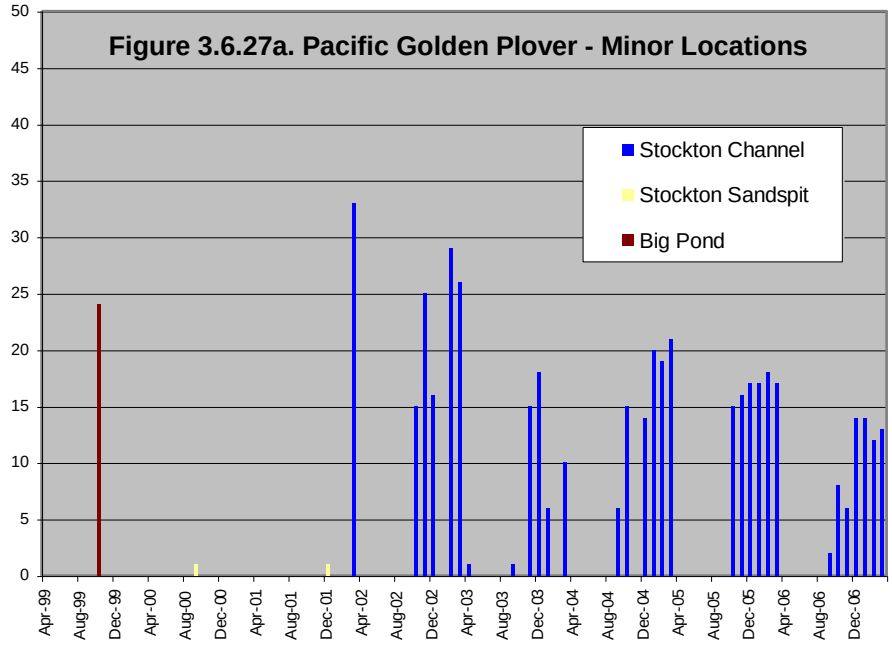


Figure 3.6.27a. Pacific Golden Plover - Minor Locations
Stockton Channel
Stockton Sandspit
Big Pond
50
45
40
35
30
25
20
15
10
5
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

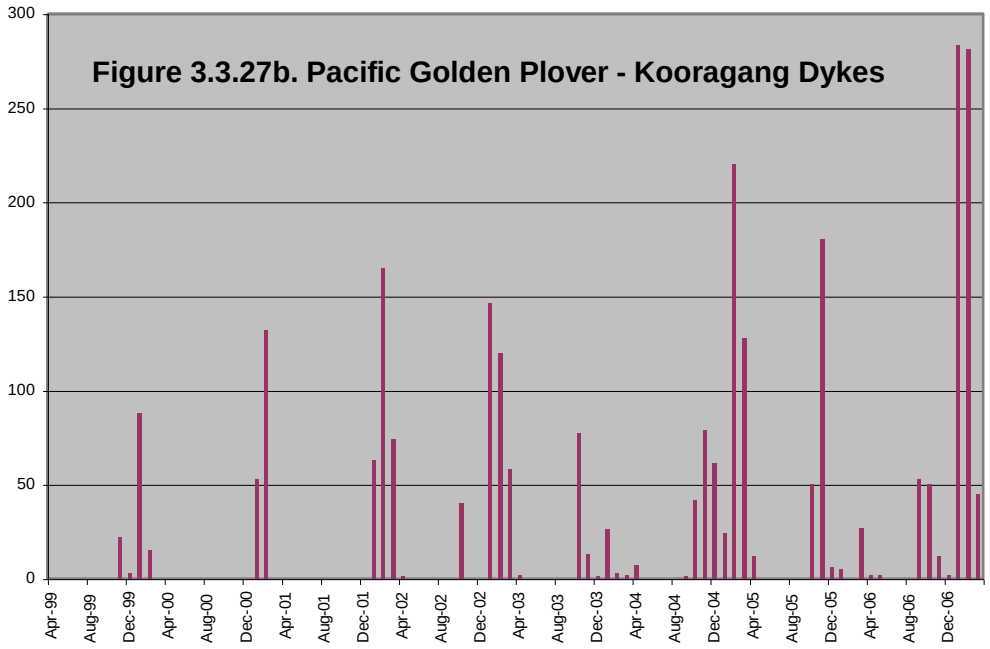


Figure 3.3.27b. Pacific Golden Plover - Kooragang Dykes
300
250
200
150
100
50
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

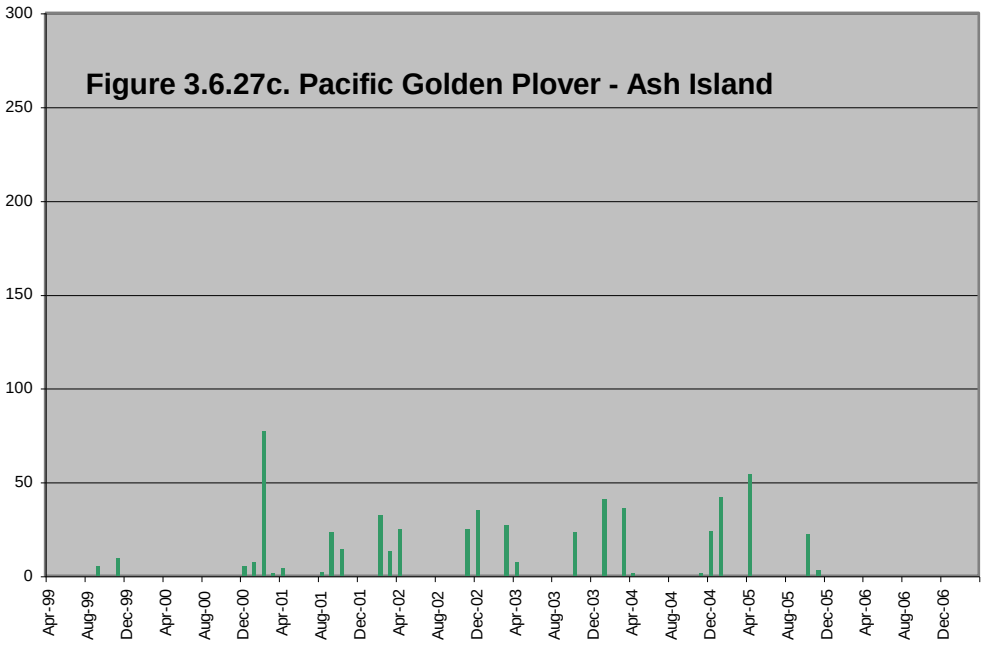


Figure 3.6.27c. Pacific Golden Plover - Ash Island
300
250
200
150
100
50
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

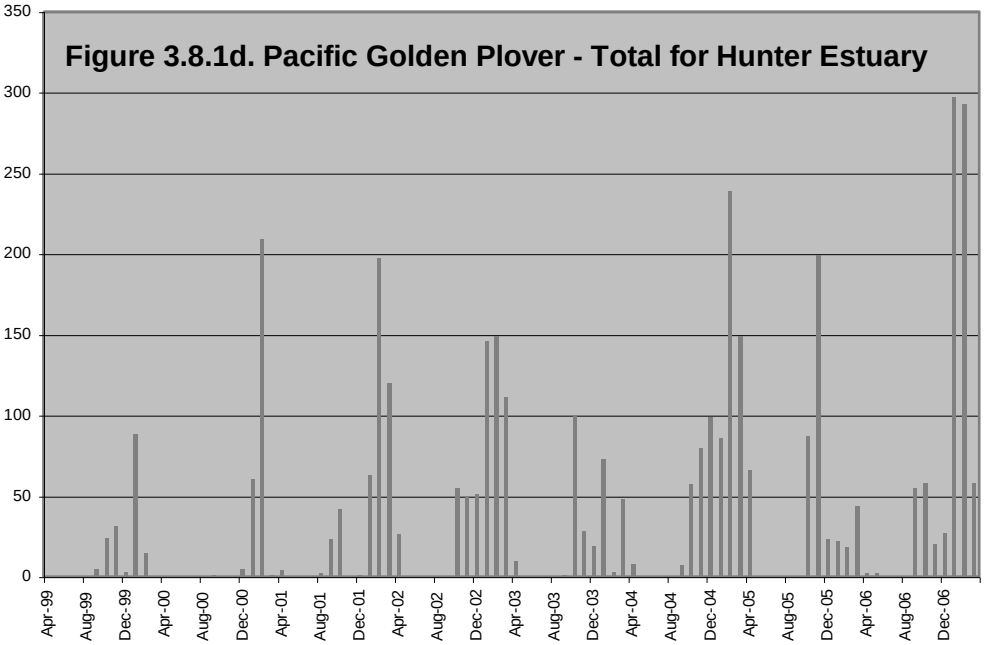


Figure 3.8.1d. Pacific Golden Plover - Total for Hunter Estuary
350
300
250
200
150
100
50
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

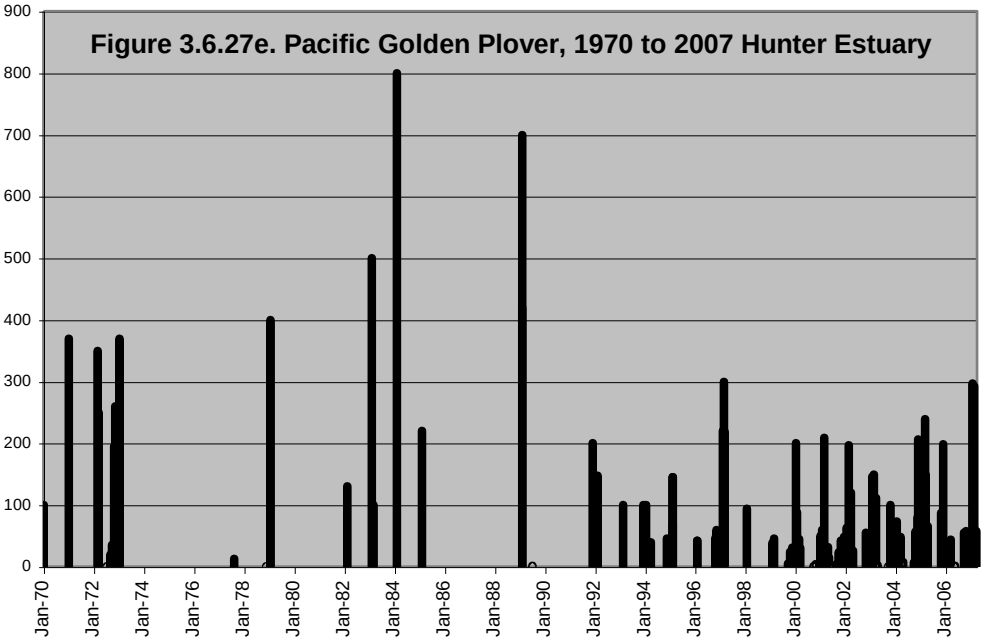


Figure 3.6.27e. Pacific Golden Plover, 1970 to 2007 Hunter Estuary
900
800
700
600
500
400
300
200
100
0
Jan-70
Jan-72
Jan-74
Jan-76
Jan-78
Jan-80
Jan-82
Jan-84
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06

### 3.6.28 Grey Plover

One to three Grey Plovers have occasionally been recorded in the Hunter Estuary.

*Recorded at:*

Kooragang Dykes (3).
Stockton Sandspit (2)
Wader Pond (1)

*Status:* Accidental. Breeds in the northern hemisphere.

### 3.6.29 Double-banded Plover

Double-banded Plovers are sometimes present in the Hunter Estuary from February to August (**Figure 3.6.29a**). They are not common and have not often been recorded during HBOC's monthly shorebird surveys. Double-banded Plovers migrate across the Tasman Sea from their breeding grounds in New Zealand, overwintering in eastern Australia.

*Recorded at:*

Ash Island (20)
Deep Pond (2)
Fullerton Cove (180), foraging
Hexham Swamp (11).
Pambalong Nature Reserve (6-20)
Stockton Sandspit (2)
Swan Pond (6)
Wader Pond

*Status:* Winter migrant. Breeds in New Zealand. Low numbers of Double-banded Plovers have been recorded at only a few locations around the Hunter Estuary. Only a few observations have been recorded during HBOC's monthly shorebird counts since 1999 (**Figure 3.6.29a**). During the 1970s as many as 260 Double-banded Plovers were present in the Hunter Estuary and most of the counts were above about 50 birds (**Figure 3.6.29b**). After 2000 most counts at high-tide roosts were below 10 birds indicating a drastic decline for this species. However, there has been a recent observation of 180 Double-banded Plovers foraging in Fullerton Cove (Alan Richardson pers. comm.). This suggests that, although the birds may forage in the estuary, they may roost outside the estuary, perhaps in Port Stephens where they are more regularly recorded.

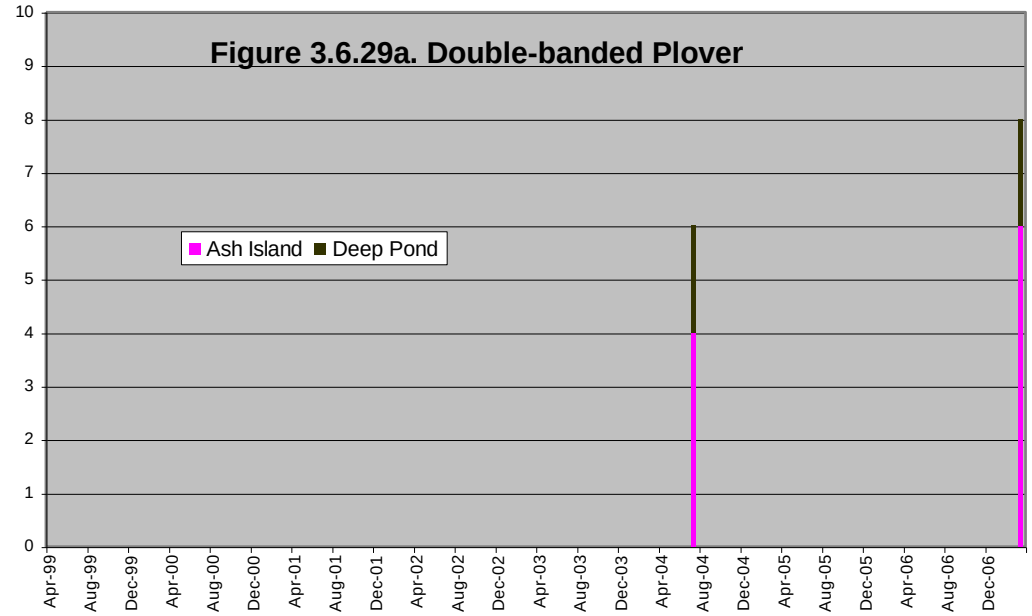


Figure 3.6.29a. Double-banded Plover
Ash Island
Deep Pond
10
9
8
7
6
5
4
3
2
1
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
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Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

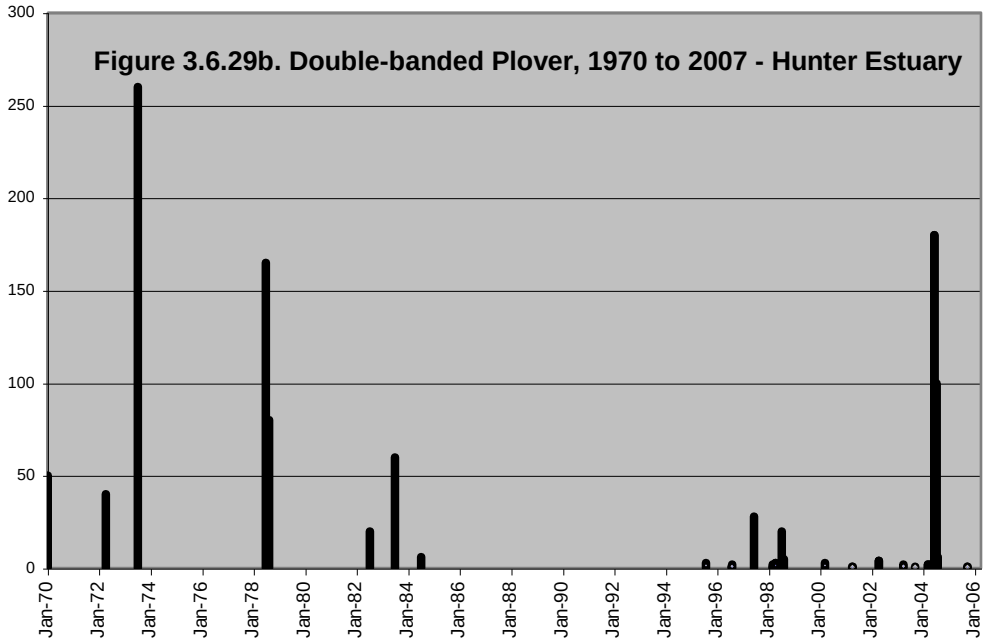


Figure 3.6.29b. Double-banded Plover, 1970 to 2007 - Hunter Estuary
300
250
200
150
100
50
0
Jan-70
Jan-72
Jan-74
Jan-76
Jan-78
Jan-80
Jan-82
Jan-84
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06

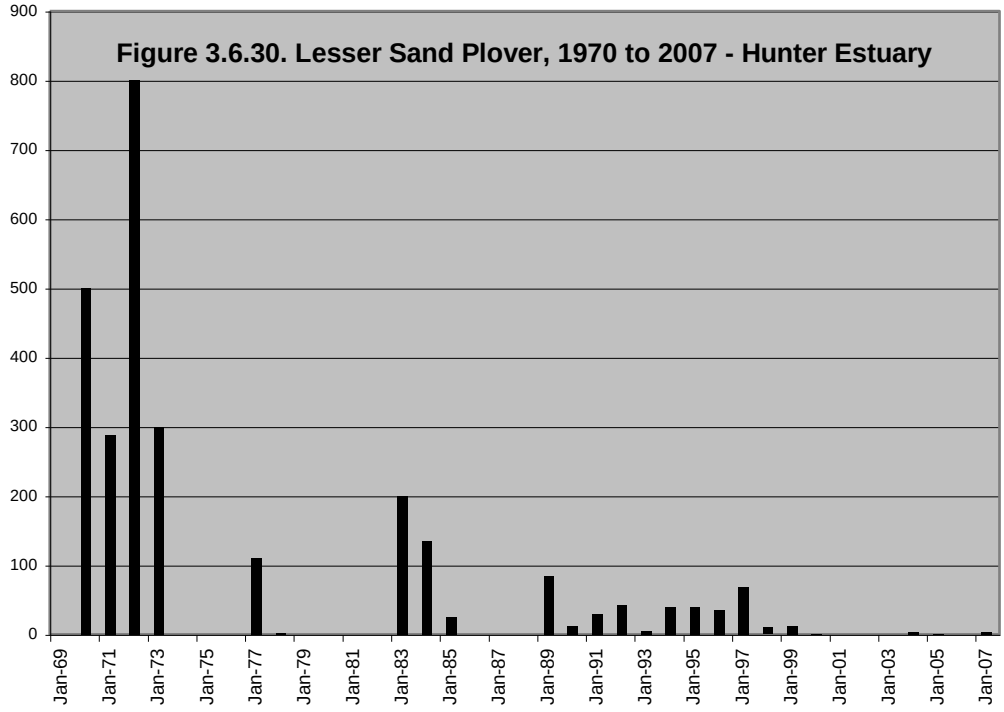
## 3.6.30 Lesser Sand Plover

Lesser Sand Plovers have been recorded only a few times during HBOC's monthly counts (1999 to 2007) (**Figure 3.6.30**).

*Recorded at:*

Ash Island occasionally recorded
Big Pond (6-20)
Kooragang Island/ Fullerton Cove (35)
Stockton Sandspit (21), roosting, foraging on oysterbank

*Status:* Rare summer migrant. Non-breeding. As many as 800 Lesser Sand Plovers were recorded in the Hunter Estuary during the 1970s, but there has been a drastic decline in numbers since then (**Figure 3.6.30**). They are effectively locally extinct.



### 3.6.31 Greater Sand Plover

Greater Sand Plovers are rarely seen in the Hunter Estuary. A single bird was seen at Stockton Sandspit during 2005 and a few sightings of up to two birds have been reported during 2006/07.

*Status:* Accidental summer migrant. Non-breeding. During the 1970s as many as 31 Greater Sand Plovers have been recorded, but they were only occasionally observed. However, both the frequency of observations and the number have declined. There is insufficient historical data to construct a chart.

## 3.7 NON-MIGRATORY SHOREBIRDS

### 3.7.1 Painted Snipe

Painted Snipe are very rare in Australia. The fact that Painted Snipe have been recorded at six locations indicates that the Hunter Estuary is an important refuge for this species. They are likely to have been under-reported because of their cryptic plumage. It is highly likely that they have used many other wetlands in the estuary, but have not been observed.

*Recorded at:*

Dead Mangrove Creek (1), near Wagtail Way on Ash Island
Grahamstown Dam (2)
Hunter Wetlands Centre (1)
Irrawang Swamp (2)
Lenaghans Wetland (5), roosting and foraging
Melaleuca Swale (2), roosting and foraging
Pambalong Nature Reserve (2), roosting and foraging
Water Ribbon Swale (2), roosting and foraging

*Status:* Rare (probably overlooked because of its cryptic plumage). Not known to have bred in the Hunter Estuary. They are a rare bird Australia-wide and are classified as *vulnerable*.

### 3.7.2 Comb-crested Jacana

Comb-crested Jacanas have often been recorded at freshwater wetlands surrounding the Hunter Estuary, but rarely in the lower part of the estuary.

*Recorded at:*

Hunter Wetlands Centre (1)
Lenaghans Wetland (1-5)
Pambalong Nature Reserve (1)
Seaham Swamp Nature Reserve (2), 1986
Tarro Recreation Area (1-5)

*Status:* Rare bird of passage in the lower Hunter Estuary. Recorded as breeding at Seaham Swamp Nature Reserve, 1986. Listed as *vulnerable*.

### 3.7.3 Bush Stone-Curlew

Not recorded from the Hunter Estuary. Breeds in very small numbers to the immediate north and south of the estuary but often requires protective measures for success.

*Status:* Extinct in the Hunter Estuary. Listed as *endangered*.

### 3.7.4 Beach Stone-Curlew

Seen only once in the Hunter Estuary since 1993 as a single bird at Stockton Sandspit in 2002.

*Status:* Rare bird of passage in the Hunter Estuary. Listed as *endangered*.

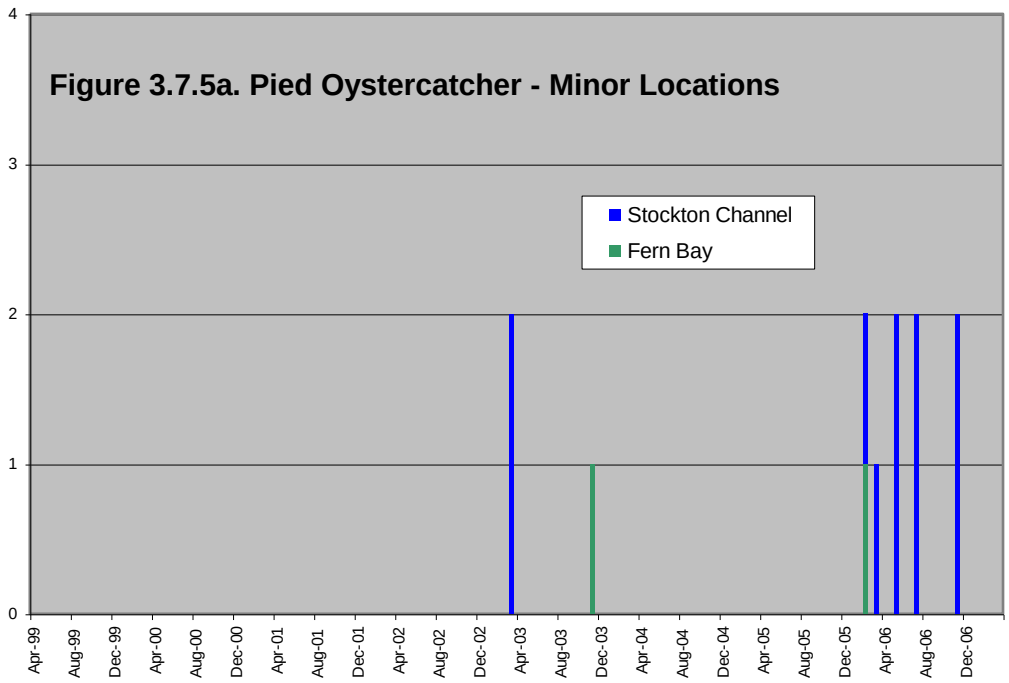
### 3.7.5 Pied Oystercatcher

Only a small number of Pied Oystercatchers inhabit the saline parts of the Hunter Estuary. Seven were recorded in 2006; however, sixteen were recorded in the estuary during 2004 and 29 in 2003 (**Figure 3.7.5d**).

*Recorded at:*

Fern Bay (1)
Fullerton Cove, foraging
Horseshoe Beach (8)
Kooragang Dykes (24), roosting and foraging
North Arm Sandflats (2), roosting and foraging
Stockton Channel (2)
Stockton Sandspit (28)

*Status:* Resident, breeding. Nested on Stockton Sandspit during October/November 2007. Pairs with very young birds indicated that they may have nested on the Kooragang Dykes in 2004. They are known to nest in sand dunes along Newcastle Bight. Listed as *vulnerable*. Historical data suggests that numbers declined from 1972 to the early 1990s then increased to a maximum of 29 in 2003 and, during the last few years, have declined again (**Figure 3.7.5e**).



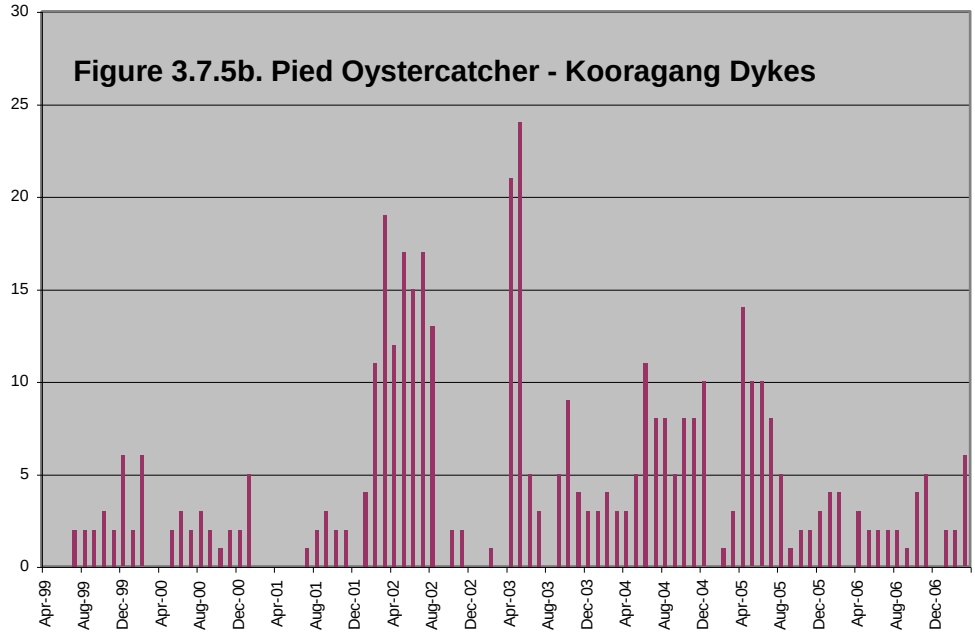


Figure 3.7.5b. Pied Oystercatcher - Kooragang Dykes
30
25
20
15
10
5
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

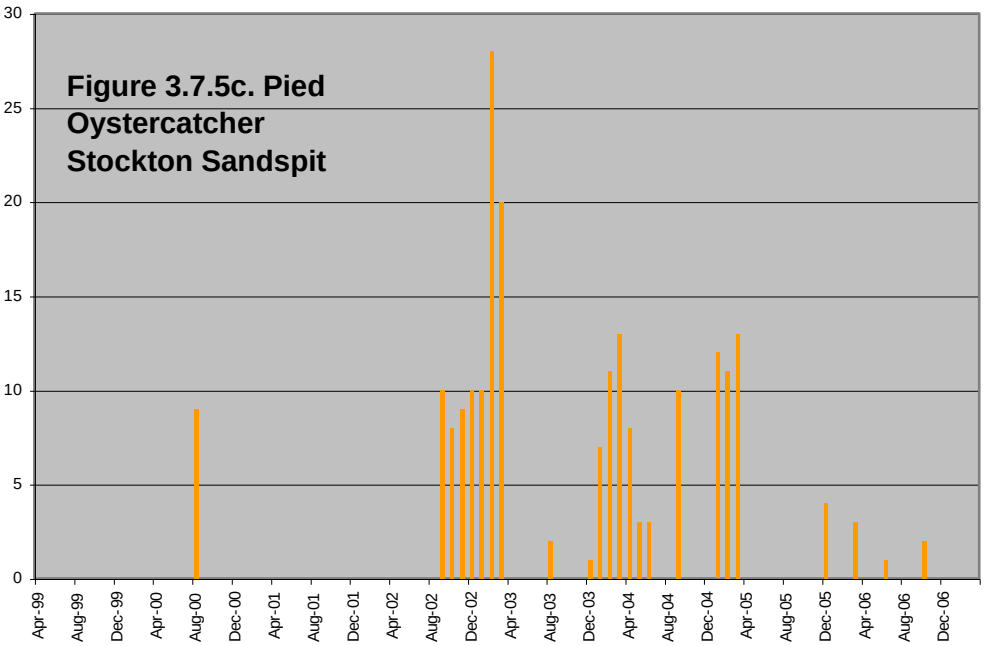


Figure 3.7.5c. Pied Oystercatcher Stockton Sandspit
30
25
20
15
10
5
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
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Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

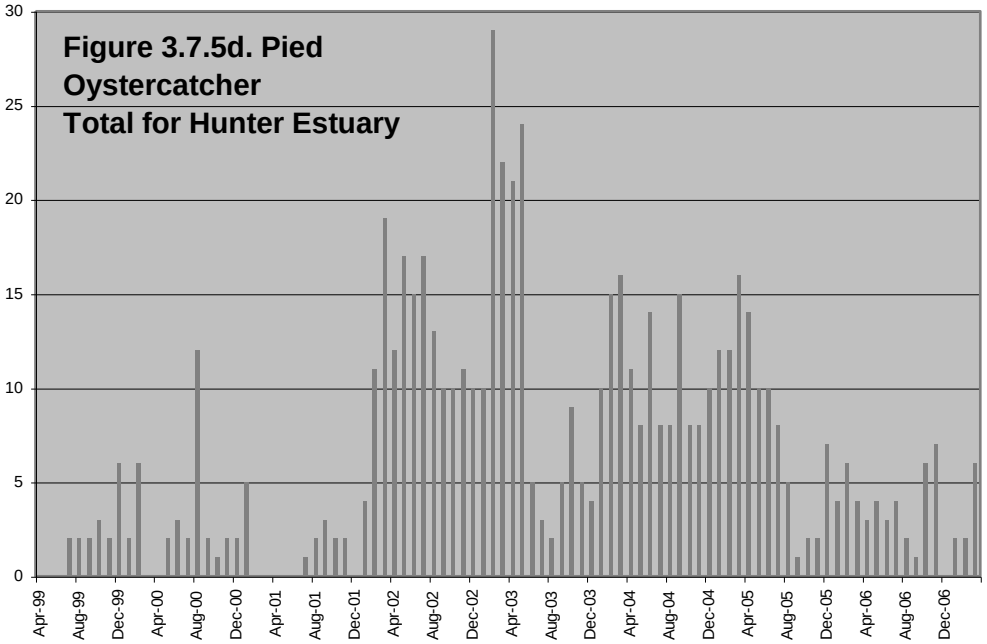


Figure 3.7.5d. Pied Oystercatcher
Total for Hunter Estuary
30
25
20
15
10
5
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

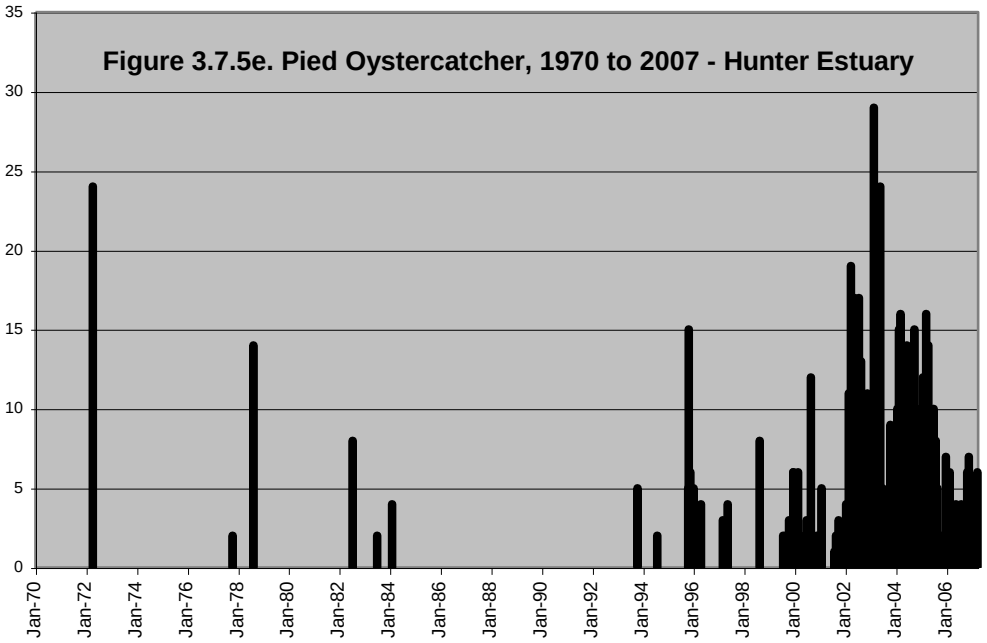


Figure 3.7.5e. Pied Oystercatcher, 1970 to 2007 - Hunter Estuary
35
30
25
20
15
10
5
0
Jan-70
Jan-72
Jan-74
Jan-76
Jan-78
Jan-80
Jan-82
Jan-84
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06

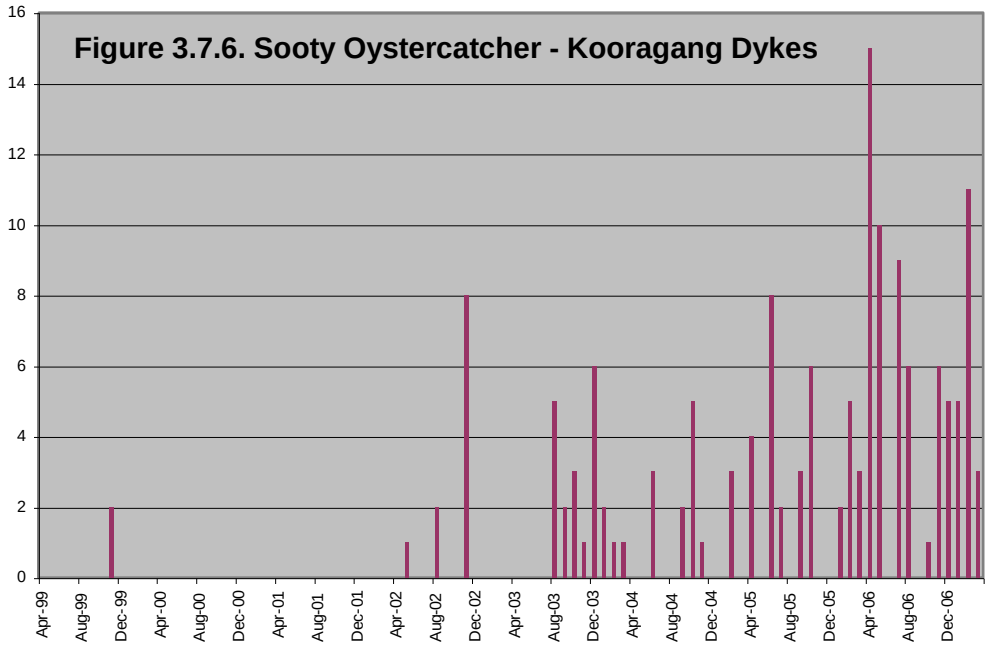
### 3.7.6 Sooty Oystercatcher

Sooty Oystercatchers forage mostly on coastal rock platforms. However, at high tide, many oystercatchers from the rock platform population (maximum number 26 during 2006) fly into the estuary to roost on Stony Point or further up the estuary to the Kooragang Dykes. As the tide recedes they have been observed foraging on the Kooragang Dykes, Stony Point and on oyster banks off Stockton Sandspit.

*Recorded at:*

Kooragang Dykes (15), roosting and foraging, (19) flying up-river
Stockton Sandspit, (4), foraging on oysterbank
Stockton Channel (1), roosting
Stony Point (13), roosting and foraging

*Status:* Common resident for the Hunter Estuary. Breeds on offshore island, but not in the estuary. Listed as *vulnerable*. Sooty Oystercatchers have been increasing in numbers along the Newcastle coastal rock platforms since the early 1990s from less than 8 to 23 in 2005 (Herbert 2006a & b) and 26 during 2006 (Judi Thomas pers. comm.). This has also been reflected in the increasing observations of Sooty Oystercatchers roosting on the Kooragang Dykes during regular HBOC monthly high-tide shorebird surveys (**Figure 3.7.6**).



### 3.7.7 Red-necked Avocet

Red-necked Avocets are present in the Hunter Estuary in large numbers. Only a few times since monthly monitoring of shorebirds began in April 1999 have they departed the estuary when inland rains created suitable conditions for breeding on inland wetlands (**Figure 3.7.7d**). Since removal of mangroves from the Stockton Sandspit in September 2002, most Red-necked Avocets roost in the lagoon at Stockton Sandspit. They also roost at the Kooragang Dykes and Dyke Ponds and, to a lesser extent, in Swan Pond, Ash Island. At low tide they forage mainly around peripheral mudflats in the northern part of Fullerton Cove, but at mid-tides they can forage off Stockton Sandspit and in the Kooragang Dyke Ponds. Many avocets also forage and roost in Swan Pond and Deep Pond. Avocets have also been occasionally recorded from peripheral freshwater wetlands.

*Recorded at:*

Ash Island (718), roosting and foraging
Big Pond (410), foraging
Deep Pond (2,000), roosting and foraging
Fish Fry Flats (1),
Fullerton Cove Beach (2,150), roosting
Hexham Swamp (4)
Hunter Wetlands Centre (41), roosting and foraging
Kooragang Dykes and Dyke Ponds (3,000), roosting and foraging
Lenaghans Wetland
Milhams Pond (198), roosting and foraging
Pambalong Nature Reserve (8)
Phoenix Flats (1)
Stockton Sandspit (5,000, HBOC's monthly counts); (7,000, Tom Clarke pers. comm.), roosting and foraging
Swan Pond (243), roosting and foraging
Swan/Wader Ponds (520), roosting and foraging
Wader Pond (178), roosting and foraging
Warabrook Wetland
Woodberry Swamp (200)

*Status:* Non-breeding resident (since 1980). Breeds at inland wetlands when conditions are suitable. Red-necked Avocets are often the most numerous bird species in the lower Hunter Estuary and, since 1980, have only occasionally been absent. However, if the inland undergoes a prolonged wet period this situation may reverse and the birds may disperse to interior wetlands where they probably were during the 1970s. After being absent during the 1970s, from 1980 numbers gradually increased to reach a maximum of 5,032 during 2006 and then 7,000 (Tom Clarke pers. comm.), the greatest number ever recorded in the Hunter Estuary (**Figure 3.7.7d**). Avocets were mostly absent in the estuary during the 1970s (only one record of 16 birds) (**Figure 3.7.7e**). Since then numbers have continued to increase to the present.

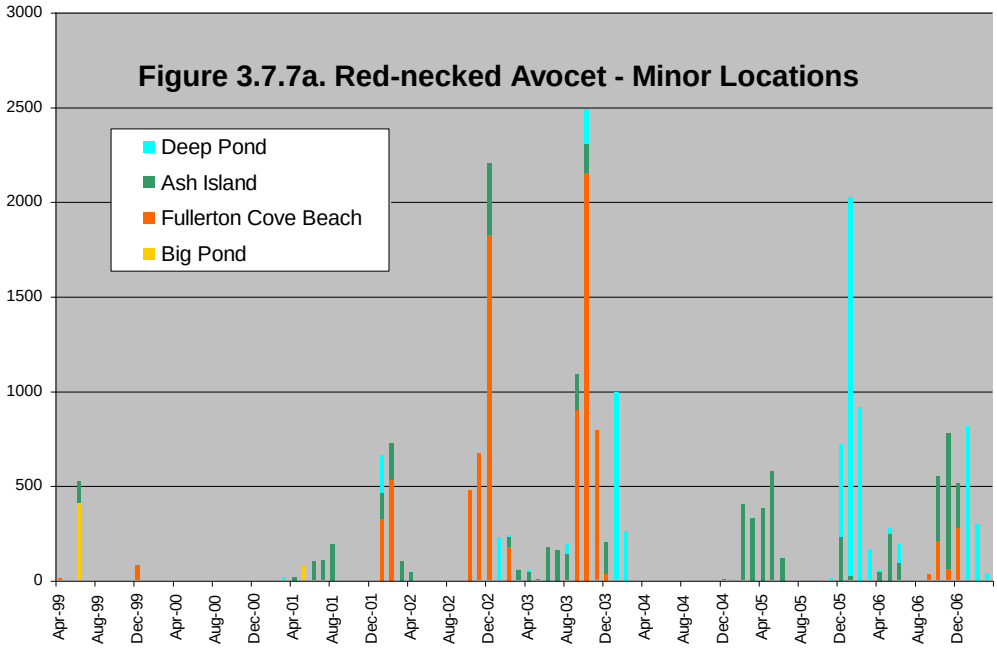


Figure 3.7.7a. Red-necked Avocet - Minor Locations
Deep Pond
Ash Island
Fullerton Cove Beach
Big Pond
3000
2500
2000
1500
1000
500
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
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Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

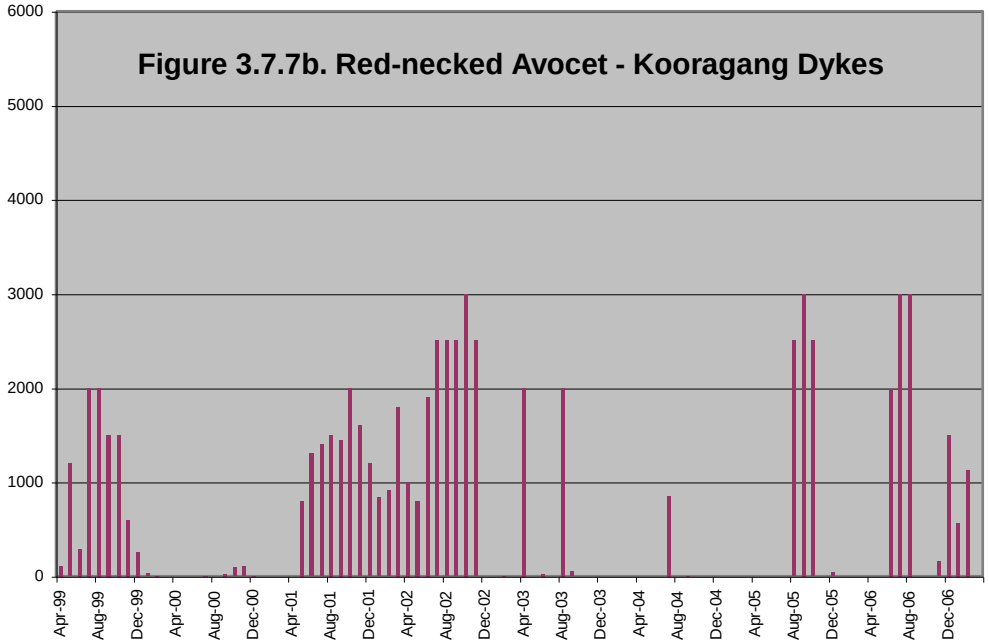
Figure 3.7.7b. Red-necked Avocet - Kooragang Dykes
6000
5000
4000
3000
2000
1000
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

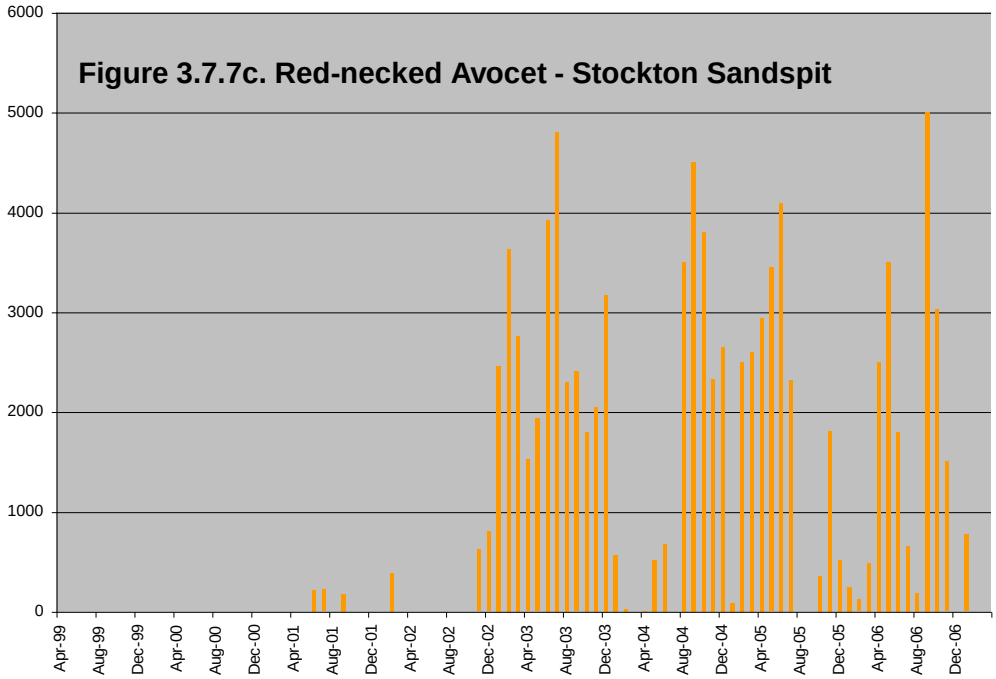
Figure 3.7.7c. Red-necked Avocet - Stockton Sandspit
6000
5000
4000
3000
2000
1000
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
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Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

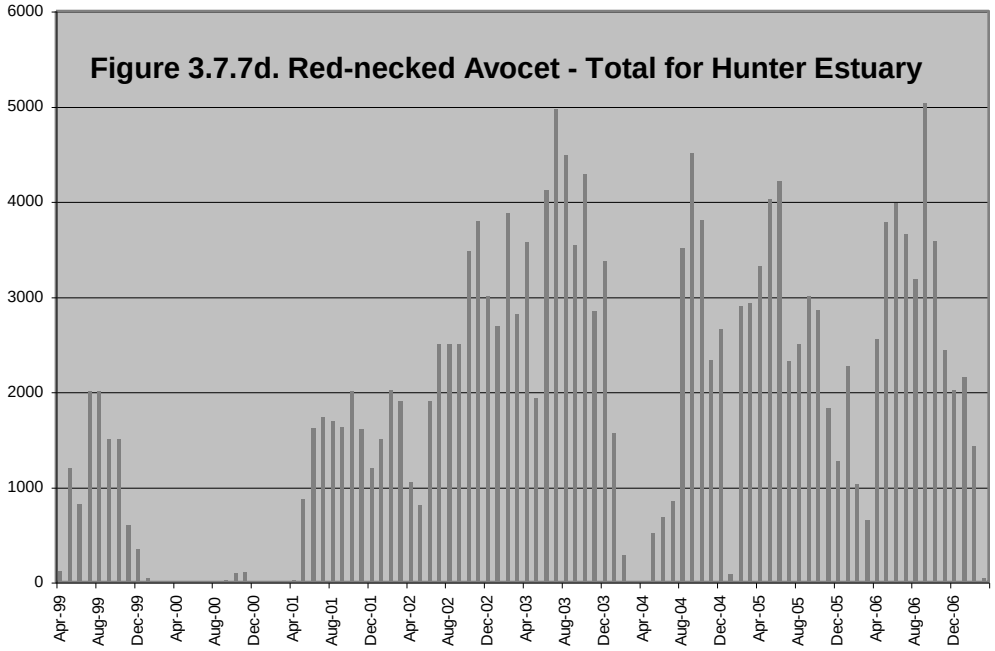
Figure 3.7.7d. Red-necked Avocet - Total for Hunter Estuary
6000
5000
4000
3000
2000
1000
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

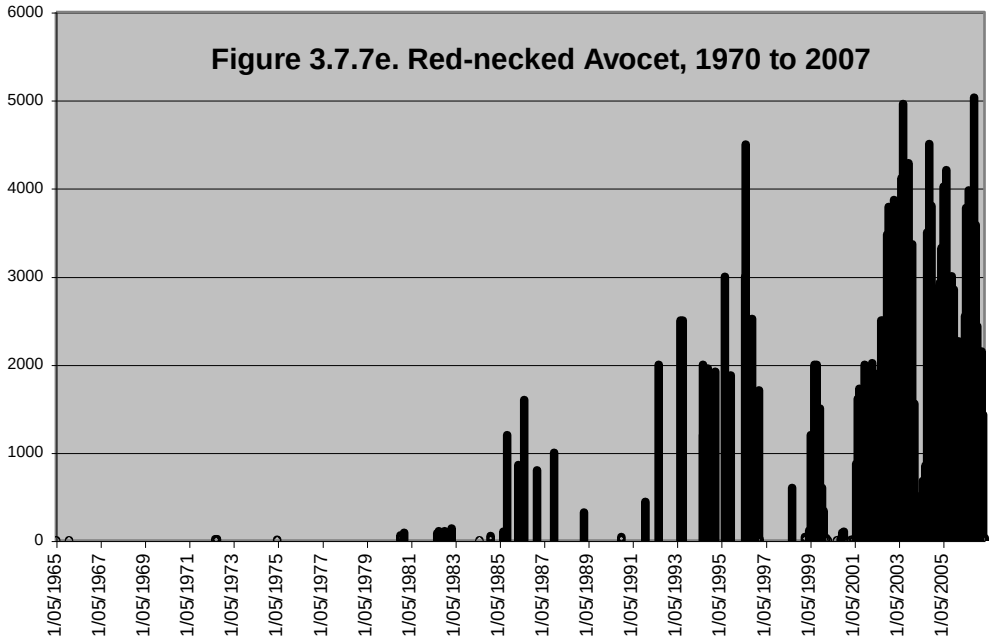
Figure 3.7.7e. Red-necked Avocet, 1970 to 2007
6000
5000
4000
3000
2000
1000
0
1/05/1965
1/05/1967
1/05/1969
1/05/1971
1/05/1973
1/05/1975
1/05/1977
1/05/1979
1/05/1981
1/05/1983
1/05/1985
1/05/1987
1/05/1989
1/05/1991
1/05/1993
1/05/1995
1/05/1997
1/05/1999
1/05/2001
1/05/2003
1/05/2005

## 3.8 TERNS

### 3.8.1 Caspian Tern

Caspian Terns are present in the Hunter Estuary in small numbers, generally less than 20, usually 1-5. They are most abundant in autumn and winter, and are often completely absent during spring and early summer when they presumably depart the estuary to nest elsewhere (**Figure 3.8.1**).

*Recorded at:*

Ash Island (6-10)
Bedminster Swamp (3)
Big Pond (7, in the past)
Deep Pond (4)
Fullerton Cove Beach (1), roosting
Fish Fry Flats (1)
Kooragang Dykes (19)
Newcastle Wetlands Reserve (1)
North Arm Sandflats (3)
Raymond Terrace (1-5)
Stockton Sandpit (15)
Swan Pond (5)
Wader Pond (2)
Warabrook Wetland

*Status:* Resident. Not known to breed in the Hunter Estuary.

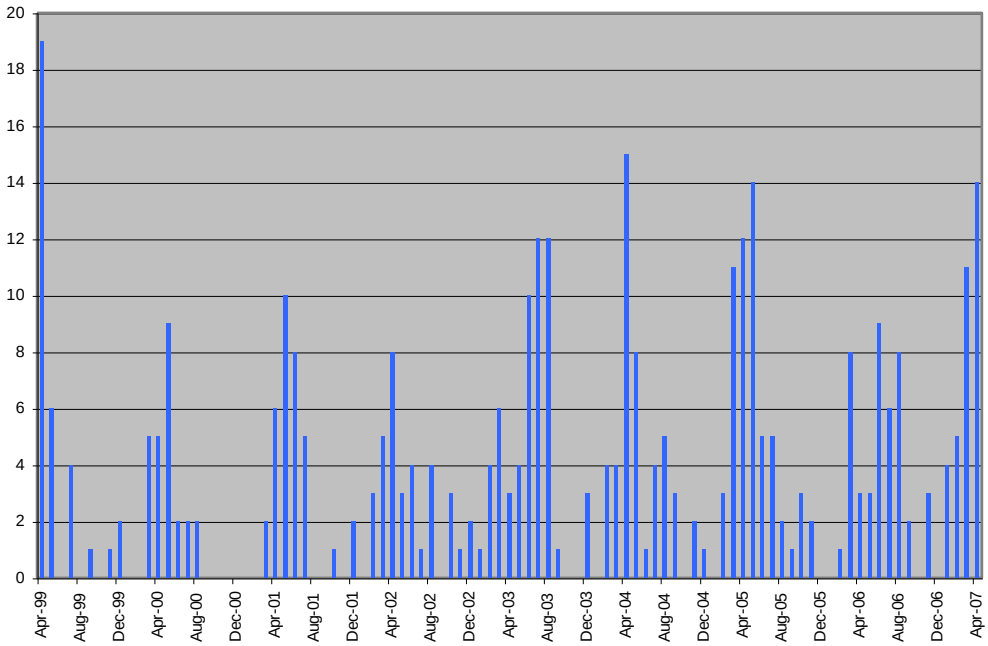


**Figure 3.8.1.** Caspian Tern totals for all locations monitored for HBOC's monthly shorebird counts, 1999 to 2007.

### 3.8.2 Crested Tern

Crested Terns are mainly pelagic seabirds that can also forage and roost in the lower parts of the Hunter Estuary. Several hundred are usually present along the Newcastle coastal rock platforms, but large numbers are less often observed within the estuary. There is a tendency for Crested Terns to be most abundant from January to April and absent or in low numbers from winter to early summer (**Figure 3.8.2**).

*Recorded at:*

Deep Pond
Fern Bay (1)
Fullerton Cove Beach (2)
Horseshoe Beach, near estuary mouth (100+)
Kooragang Dykes (30)
North Arm Sandflats (5)
Stockton Channel (22)
Stockton/Kooragang Island (100+)
Stockton Sandspit (20+)
Swan Pond

*Status:* Common resident. Not known to breed in the Hunter Estuary. There is no apparent trend in numbers of Crested Terns in the estuary (**Figure 3.8.2)**.

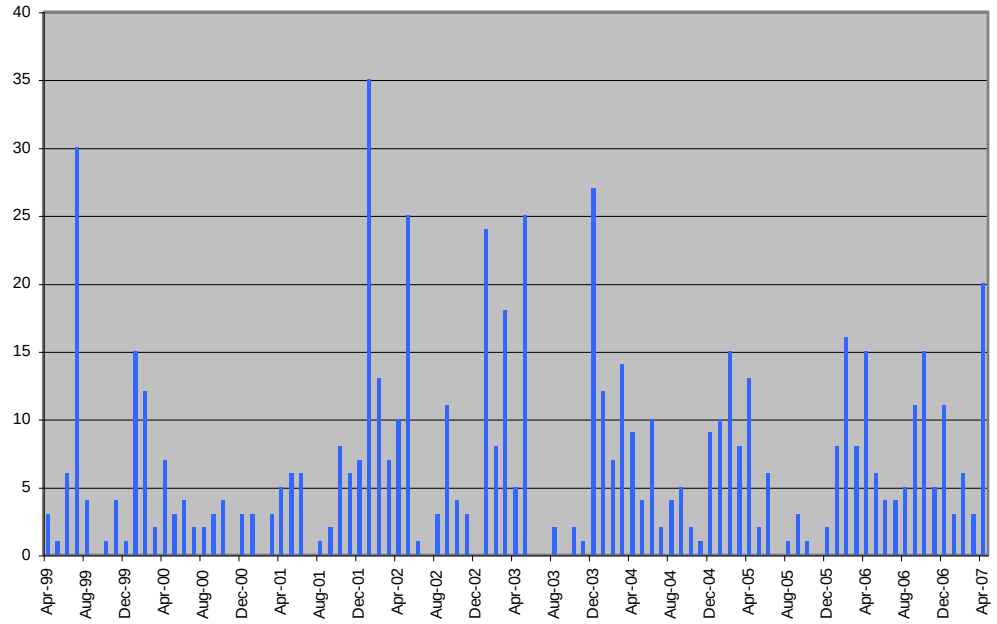


**Figure 3.8.2.** Crested Tern totals for all locations monitored for HBOC's monthly shorebird counts, 1999 to 2007.

### 3.8.3 Common Tern

Common Terns are mostly coastal birds that are usually recorded only as far up the estuary as Stockton Sandspit/Kooragang Island. They are more often observed at the river entrance near Nobbys Breakwater and in Newcastle Harbour.

*Recorded at:*

Grahamstown Dam (6–20)
Kooragang Dykes (60)
Newcastle Harbour (250+)
Nobbys Breakwater (200)
Stockton Channel/Kooragang Island (100)

*Status:* Summer migrant. Does not breed in the Hunter Estuary.

### 3.8.4 Little Tern

Little Terns are not common birds in the Hunter Estuary, being generally observed as 1-5 birds, although large numbers have occasionally been recorded. They forage and rest up-river, probably at least as far as Fullerton Cove.

*Recorded at:*

Fullerton Cove (probably)
Kooragang Dykes (3)
Kooragang Island (200)
Newcastle Harbour (20)
North Arm Sandflats (3)
Stockton Channel (1)
Stockton Sandspit (20-30)

*Status:* Summer migrant. Historically bred in the Hunter Estuary, but not for the past 30 years.

### 3.8.5 White-winged Black Tern

White-winged Black Terns are only sporadically present in the Hunter Estuary, but sometimes in large numbers. They are most often seen in Newcastle Harbour (30+) and Nobbys Breakwater (40). Mostly seen in their white, non-breeding plumage, but also many reports of birds in their black, breeding plumage.

*Recorded at:*

Ash Island (2)
Fullerton Cove (300)
Grahamstown Dam (150)
Hunter Wetlands Centre (1-2)
Newcastle Harbour (30+)
Nobbys Breakwater (40)
Stockton (16)
Stockton Channel
Woodberry Swamp (15)

*Status:* Summer migrant (probably under-recorded). Does not breed in the Hunter Estuary.

## 3.9 OWLS

### 3.9.1 Powerful Owl

*Status:* Not recorded in the Hunter Estuary.

### 3.9.2 Barking Owl

*Status:* Not recorded in the Hunter Estuary.

### 3.9.3 Masked Owl

Masked Owls are not an estuary-dependant bird but have been recorded in the general estuary area.

*Recorded at:*

Ash Island Bridge (dead bird)
Fern Bay (dead bird)
Fullerton Cove Road (dead bird)
Hexham (dead bird)
Hunter Wetlands Centre (1)
Thornton (1), close to estuarine habitat

*Status:* Rare. Listed as *vulnerable*.

### 3.9.4 Grass Owl

Grass Owls have only recently (2006) been observed in the Hunter Estuary on Ash Island (**Figure 2.4.8**) and in the Tomago Wetlands (**Figure 2.2.12**) roosting in, and foraging over, coarse grassland and upper saltmarsh habitats. There is potential habitat for Grass Owls in Hexham Swamp and this has been confirmed by a Grass Owl calling from the southern margin of Hexham Swamp in March 2007 (Greg Little pers. comm.). Potential habitat for Grass Owls also exists in surrounding peripheral wetlands and in a large area to the north of open-water ponds at Woodberry Swamp. The recent discovery of Grass Owls in the estuary indicates that nocturnal birdlife has not been surveyed as rigorously as diurnal birdlife.

*Recorded at:*

Ash Island (3) (**Figure 2.4.8**)
Hexham Swamp
Tomago Wetlands (unknown number) (**Figure 2.2.12**)

*Status:* Rare in the Hunter Estuary. Probably breeding. Listed as *vulnerable*. The size of the Grass Owl population is unknown, but likely to be small.

## 3.10 PASSERINE BIRDS

### 3.10.1 Yellow Wagtail

The Yellow Wagtail is the only passerine bird considered a *Significant Species* as it is listed in the CAMBA and JAMBA treaties. Normally a bird of Southeast Asia, it is accidental to southeast Australia, but has been regularly recorded in the Hunter Estuary. A single bird was first observed in February 1993 on Big Pond, then again in January 1998 when two birds were seen at the Hunter Wetlands Centre and then three at Market Swamp. As many as seven were recorded along Wagtail Way, between Swan and Wader Ponds, until March 1998. From 2000 to 2005, one to six birds have been recorded between January and early April (only one record in November). Sightings have mostly been along Wagtail Way in Area E of Ash Island and occasionally along the Deep Pond side of the industrial railway embankment.

*Recorded at:*

Big Pond (1)
Deep Pond (1), adjacent to rail line
Hunter Wetlands Centre (2)
Market Swamp (3)
Wagtail Way - Swan Pond/Wader Pond (7)

*Status:* Rare summer migrant. Does not breed in the Hunter Estuary.

## 3.11 DISCUSSION – SIGNIFICANT SPECIES

### 3.11.1 Most Abundant Significant Species

The most numerous Significant Species in the Hunter Estuary, with recorded numbers exceeding 1,000 (since 1993 when HBOC's Annual Bird Report commenced) are listed below in decreasing order:

Straw-necked Ibis (13,509, Irrawang Swamp)
Red-necked Avocet (5,000, Stockton Sandspit)
Cattle Egret (3,900, Seaham Swamp Nature Reserve)
Australian White Ibis (2,848, Hunter Wetlands Centre)
Bar-tailed Godwit (2,019, Kooragang Dykes)
Sharp-tailed Sandpiper (1,800, Hexham Swamp)
Curlew Sandpiper (1,500, Fullerton Cove)
Chestnut Teal (1,500+, Ash Island; 1,128, Swan Pond; 1,010, Deep Pond)
Red Knot (1,669, Ash Island, Milhams Pond)

By comparison there are only three Other Species that exceed 1,000: Silver Gull, Grey Teal and Black-winged Stilt (see **Discussion – Section 4.13**).

### 3.11.2 Population Trends since 1999

Since 1999, when HBOC monthly shorebird counts commenced, eight Significant Species have been recorded more often or in increased numbers:
Magpie Goose
White-bellied Sea-Eagle
Caspian Tern
Common Sandpiper
Grey-tailed Tattler
Pacific Golden Plover
Sooty Oystercatcher
Red-necked Avocet

Since 1999, four Significant Species have been recorded in more or less stable numbers:
Chestnut Teal
Marsh Sandpiper
Common Greenshank
Red Knot

Since 1999, 12 Significant Species have been recorded in decreasing numbers:
Great Egret
Australian White Ibis
Straw-necked Ibis
Black-tailed Godwit
Bar-tailed Godwit
Eastern Curlew
Terek Sandpiper
Great Knot
Red-necked Stint
Sharp-tailed Sandpiper
Curlew Sandpiper
Pied Oystercatcher

### 3.11.3 Population Trends since 1970

Historical records in the Hunter Estuary commenced in 1970. Since that time only two Significant Species have been recorded more often or in increased numbers:

Sooty Oystercatcher
Red-necked Avocet

Since 1970, two Significant Species have been recorded in more or less stable numbers:

Common Sandpiper
Red Knot

Since 1970, 14 Significant Species have been recorded in decreasing numbers:

Black-tailed Godwit
Bat-tailed Godwit
Eastern Curlew
Marsh Sandpiper
Common Greenshank
Terek Sandpiper
Grey-tailed Tattler
Great Knot
Red-necked Stint
Curlew Sandpiper
Pacific Golden Plover
Double-banded Plover (almost locally extinct)
Lesser Sand Plover (locally extinct)
Little Tern

It is interesting to note that the only two species that have increased in number in the Hunter Estuary are non-migratory, Australian endemic shorebirds, whereas 13 out of the 14 species that have decreased in number are migratory shorebirds.

# 4.0 OTHER SPECIES

The 84 "Other Species" (**Appendix 1**), discussed here, refer to wetland dependant, wetland frequenting or especially abundant birds that have not been discussed in **Section 3.0** Significant Species.

## 4.1 QUAIL

### 4.1.1 Stubble Quail

Stubble Quail frequent grassland habitats and are thus not strictly an estuary dependant or frequenting bird. However, they have been observed in coarse grassy areas of Kooragang Island near Deep Pond (2). There are no other recorded sightings within the Hunter Estuary but, because of their cryptic habits, quail are probably under-reported.

*Status:* Uncertain, possibly irruptive.

### 4.1.2 Brown Quail

Moderately often seen in coarse grassland anywhere throughout the Hunter Estuary. Brown Quail are often seen on Ash Island, particularly at the western end of Bellfrog Track just before it joins Ramsar Road, known as Quail Corner.

*Recorded at:*

Ash Island (10)
BHP Moat (2)
Big Pond (1)
Deep Pond (6)
Grahamstown Dam
Hexham Swamp (7)
Hunter Wetlands Centre (3)
Kooragang Dykes (10)
Milhams Pond (8)
Phoenix Flats (2)
Tank Paddock (6)
Tomago (1-5)
Warabrook Wetland

*Status:* Resident. Breeds in the Hunter Estuary. Recorded as breeding at the Hunter Wetlands Centre.

## 4.2 WILDFOWL

### 4.2.1 Plumed Whistling Duck

Large numbers are often observed west of the Hunter Estuary, but occur sporadically and in smaller numbers at many freshwater locations around the estuary.

*Recorded at:*

Hunter Wetlands Centre (12)
Lenaghans Wetland (20+)
Pambalong Nature Reserve (32)
Tarro Swamp (2)

*Status:* Bird of passage. Breeding at Pambalong Nature Reserve and Lenaghans Wetland.

### 4.2.2 Wandering Whistling Duck

Moderately large numbers are often seen at many locations throughout the Hunter Estuary.

*Recorded at:*

Ash Island (10-20)
Deep Pond (5)
Hunter Wetlands Centre (150+)
Lenaghans Swamp (40)
Market Swamp (50)
Newcastle University Wetland (30)
Newcastle Wetlands Reserve (60+)
Pambalong Nature Reserve (40)
Seaham Swamp Nature Reserve (7)
Tank Paddock (1-5)
Tarro Swamp (8)
Warabrook Wetland

*Status:* Uncommon resident. Breeding at the Hunter Wetlands Centre, Newcastle Wetlands Reserve, Market Swamp, Tarro Swamp, Pambalong Nature Reserve and Lenaghans Wetland.

### 4.2.3 Musk Duck

Occasionally present at many wetlands with deep open water. Regularly present at Grahamstown Dam. **Figure 4.2.3,** which represents the total of Musk Ducks on Deep Pond, Blue-billed Duck Pond and BHP Moat, shows that Musk Ducks were not always present at those locations. But, when they did appear, they stayed for many months, and in one case, for up to a year before departing.

*Recorded at:*

BHP moat (1)
Blue-billed Duck Pond (1)
Deep Pond (12)
Grahamstown Dam (75)
Hunter Wetlands Centre (1)
Lenaghans Wetland (2)
Newcastle Wetlands Reserve and Golf Course Dam (2)
Tomago (6+)
Warabrook Wetland (4)

*Status:* Resident. Recorded breeding at Newcastle Wetlands Reserve, and, because of their constant presence, almost certainly breeding at Grahamstown Dam.

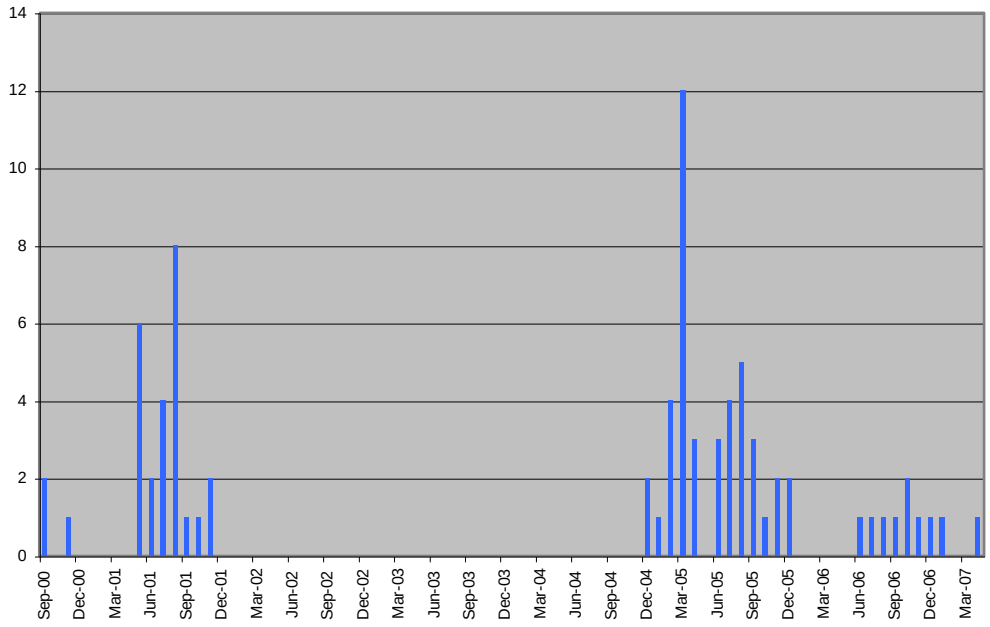


**Figure 4.2.3.** Musk Duck total for all locations monitored by HBOC's monthly shorebird counts, 1999 to 2007.

### 4.2.4 Black Swan

Widely and regularly recorded throughout the Hunter Estuary in medium to large expanses of water, sometimes in large numbers. Black Swans can be found on almost every wetland in the estuary when water levels are suitable; numbers vary greatly from year to year (**Figure 4.2.4**). Black Swans have been observed departing and arriving at wetlands at dusk and after dark, indicating significant movement between sites. They are often found even on small farm dams.

*Recorded at:*

Pambalong Nature Reserve (750)
Lenaghans Wetland (300+)
Ash Island (500+)
Bedminster Swamp (7)
Big Pond (38)
BHP Moat (20)
Blue-billed Duck Pond (8)
Deep Pond (338)
Grahamstown Dam (100-300)
Hexham Swamp (1,000)
Hunter Wetlands Centre (22)
Irrawang Swamp (300)
Long Pond (11)
Market Swamp
Seaham Swamp Nature Reserve (7)
Swan Pond (80)
Tank Paddock (51-100)
Tarro Swamp (100s)
Wader Pond (22)
Warabrook Wetland (51-100)
Woodberry Swamp (527)

*Status:* Common resident. Breeds at all wetlands throughout the Hunter Estuary depending on suitable water levels.

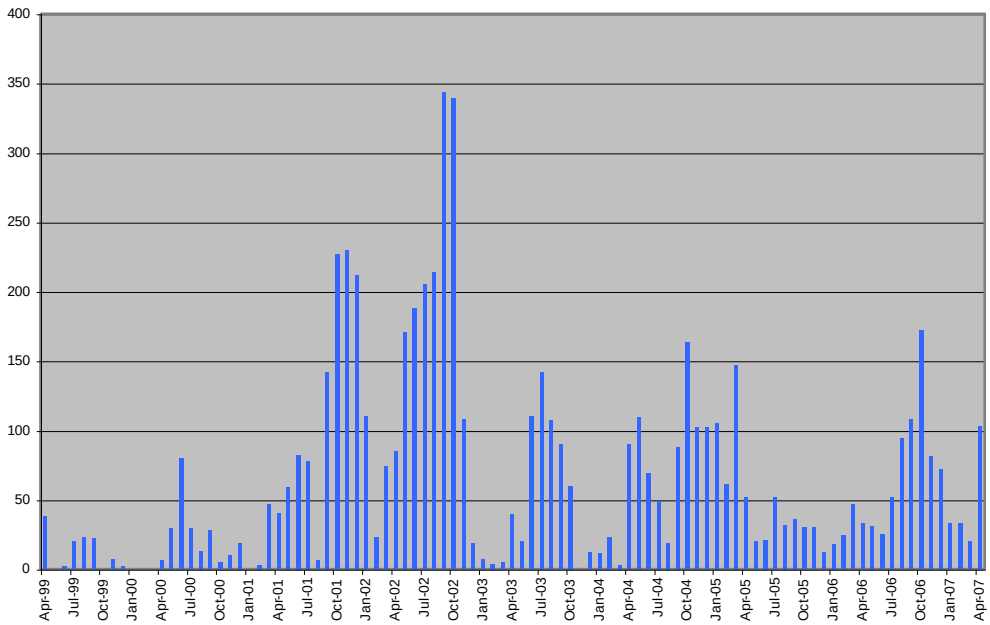


**Figure 4.2.4.** Black Swan totals for all locations monitored by HBOC's monthly shorebird counts, 1999 to 2007.

### 4.2.5 Australian Shelduck

Rarely recorded in the Hunter Estuary.

*Recorded at:*

Deep Pond (2)
Hexham Swamp (2)
Kooragang Island (4-5)
Lenaghans Wetland (2)
Swan Pond (1)
Tarro Swamp (2)
Wader Pond (2)

*Status:* Accidental.

### 4.2.6 Australian Wood Duck

More commonly seen in freshwater swamps on the periphery of the Hunter Estuary and around farm dams. Forages mainly in grassy paddocks often some distance from water bodies. Seldom seen on Ash Island.

*Recorded at:*

Ash Island (1-5)
Bedminster Swamp (17)
Grahamstown Dam (100+)
Hunter Wetlands Centre (21-50)
Irrawang Swamp (15)
Lenaghans Wetland (6-20)
Market Swamp
Newcastle University Wetland (2)
Newcastle Wetlands Reserve (20+)
Pambalong Nature Reserve (100+)
Seaham Swamp Nature Reserve (6-20)
Tank Paddock (38)
Tarro Swamp (4)
Warabrook Wetland (34)
Woodberry Swamp (4)

*Status:* Common resident in the Hunter Region, but perhaps just 'resident' for the Hunter Estuary. Breeding recorded at Thornton, Hunter Wetlands Centre, Market Swamp, Newcastle Wetlands Reserve, Warabrook Wetland and Pambalong Nature Reserve.

### 4.2.7 Mallard

Mallard are widespread, but in low numbers, in peripheral wetlands throughout the Hunter Estuary.

*Recorded at:*

Big Pond (1)
Grahamstown Dam (1-5)
Hunter Wetlands Centre
Irrawang Swamp (hybrids present)
Kooragang Island (1)
Long Pond (1)
Newcastle Wetlands Reserve (1-5)
Newline Road Swamp (1-5)
Pambalong Nature Reserve (1-5)
Ross Wallbridge Reserve (8, hybrids present)
Stockton Channel (1)
Tank Paddock (1)
Tarro Swamp (4)
Warabrook Wetland (11, 2 hybrids observed)
Woodberry Swamp (1-5)

*Status:* Resident, originally an introduced bird to Australia. Breeding recorded at Warabrook Wetland. Tends to hybridise with the Pacific Black Duck (hybrids observed at Ross Wallbridge Reserve, Warabrook Wetland and Irrawang Swamp).

### 4.2.8 Pacific Black Duck

Pacific Black Ducks are common and widespread throughout peripheral, mainly freshwater (but some saline) wetlands, surrounding the Hunter Estuary. They are often present in considerable numbers (**Figure 4.2.8**).

*Notable numbers recorded at:*

Ash Island (447)
BHP Moat (100)
Big Pond (63)
Blue-billed Duck Pond (39)
Deep Pond (300)
Grahamstown Dam (46)
Hexham Swamp (500+)
Hunter Wetlands Centre (100-150)
Irrawang Swamp (76)
Lenaghans Wetland (21-50)
Long Pond (35)
Newline Road Swamp (51-100)
Pambalong Nature Reserve (100)
Ross Wallbridge Reserve
Swan Pond (53)
Tank Paddock (51-100)
Tarro Swamp (100s)
Wader Pond (11)
Warabrook Wetland (100)
Woodberry Swamp (51-100)

*Status:* Common resident. Breeds throughout the Hunter Estuary. Recorded breeding at Hunter Wetlands Centre, Newcastle Wetlands Reserve, Market Swamp, Seaham Swamp, Warabrook Wetland, Irrawang Swamp and Pambalong Nature Reserve. Apart from the irruptions in 2005, Black Ducks have gradually increased in number since monthly monitoring began in 1999 (**Figure 4.2.8**).

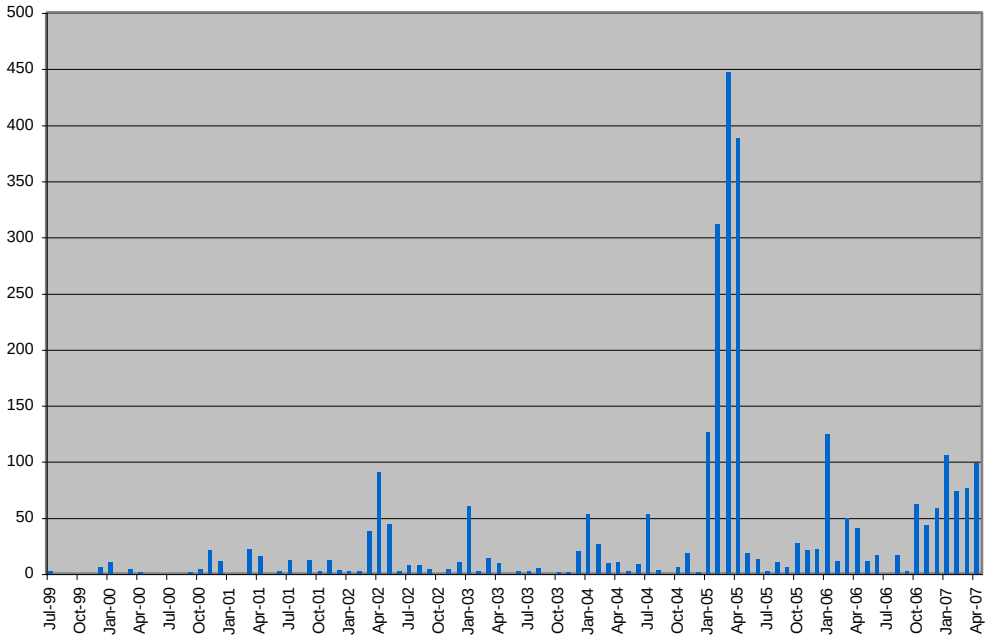


**Figure 4.2.8.** Pacific Black Duck totals for all locations monitored by HBOC's monthly shorebird counts, 1999 to 2007.

### 4.2.9 Australasian Shoveler

Widespread throughout the estuary, usually in low numbers, but occasionally in high numbers.

*Recorded at:*

Ash Island (250)
Bedminster Swamp (8)
BHP Moat (5)
Big Pond (7)
Blue-billed Duck Pond (22)
Deep Pond (189)
Grahamstown Dam (8)
Hexham Swamp (150)
Hunter Wetlands Centre (207)
Irrawang Swamp (21)
Kooragang Dykes (2)
Lenaghans Wetland (20)
Market Swamp (2)
Melaleuca Swale (7)
Newcastle University Wetland (28)
Newcastle Wetlands Reserve (20+)
Newline Road Swamp (6-20)
Pambalong Nature Reserve (100+)
Seaham Swamp Nature Reserve (20-50)
Sharpies Flat (2)
Swan Pond (53)
Tank Paddock (1)
Tarro Swamp (50+)
Teal Waters (50)
Wader Pond (21)
Warabrook Wetland
Woodberry Swamp (450)

*Status:* Resident. Breeds in the Hunter Region, but not recorded breeding in the Hunter Estuary. Since 2001, when regular monitoring of Deep Pond commenced, the rate of recording appears to have been steady.

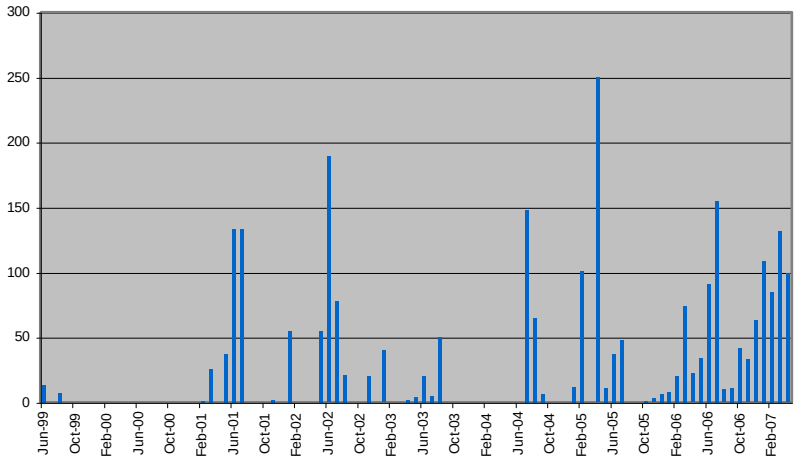


**Figure 4.2.9.** Australasian Shoveler totals for all locations monitored by HBOC's monthly shorebird counts, 1999 to 2007.

### 4.2.10 Grey Teal

Grey Teal are common throughout the Hunter Estuary, often in extremely large numbers. They are most abundant during summer and autumn, but are present in low numbers during winter and spring (**Figure 4.2.10**).

*Recorded at:*

Ash Island (1,000+)
Bedminster Swamp (69)
Big Pond (200)
BHP Moat (30)
Blue-billed Duck Pond (1)
Deep Pond (997)
Fullerton Cove Beach (7)
Hexham Swamp (2,500+)
Hunter Wetlands Centre (200)
Irrawang Swamp (108)
Kooragang Dykes (80)
Lenaghans Wetland (1,000+)
Long Pond (30)
Market Swamp
Melaleuca Swale (8)
Milhams Pond (7)
Newcastle University Wetland (4)
Newcastle Wetlands Reserve (21-50)
Newline Road Swamp (170)
Pambalong Nature Reserve (1,000)
Seaham Swamp Nature Reserve (140)
Sharpies Flat (12)
Stockton Sandspit (4)
Swan Pond (323)
Tank Paddock (10)
Tarro Swamp (20)
Teal Waters (200-300)
Wader Pond (603)
Warabrook Wetland (51-100)
Woodberry Swamp (110)

A total of 2,055 Grey Teal has been recorded on Ash Island/Kooragang Island area (probably mainly Swan Pond and Deep Pond). A mixed foraging flock of 1,325 Chestnut and Grey Teal was observed in the northwest corner of Fullerton Cove (Alan Richardson pers. comm.).

*Status:* Usual resident. Recorded breeding in the Hunter Estuary at the Hunter Wetlands Centre, Newcastle Wetlands Reserve, Market Swamp, Seaham Swamp Nature Reserve and Warabrook Wetland. The number of Grey Teal recorded since 1999 has steadily increased (**Figure 4.2.10**).

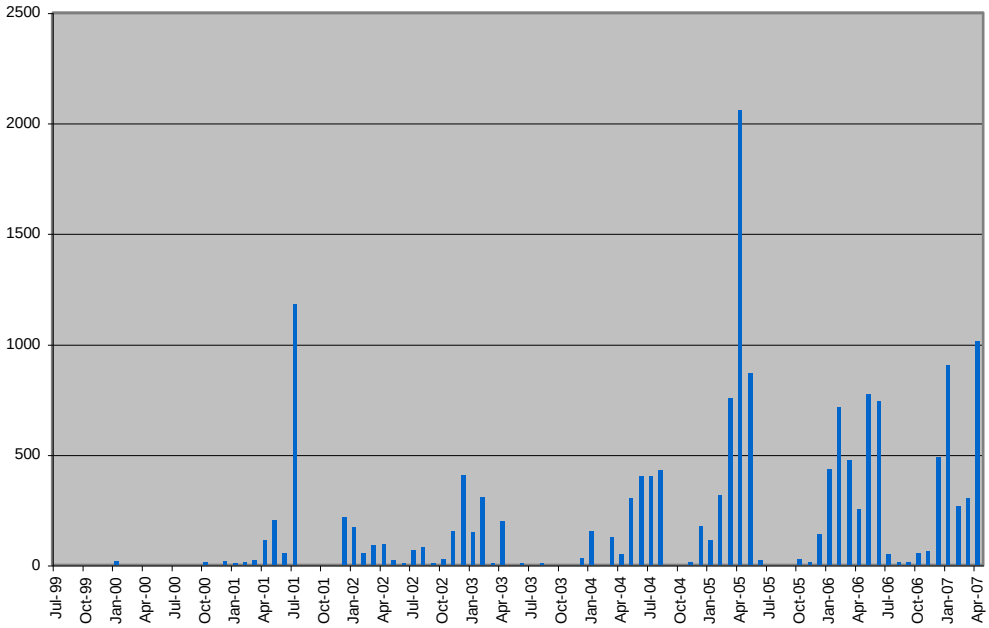


**Figure 4.2.10.** Grey Teal totals for all locations monitored by HBOC's monthly shorebird counts, 1999 to 2007.

### 4.2.11 Garganey

A single male bird in full breeding plumage was recorded in the Hunter Estuary at Market Swamp in 1993, the first New South Wales record.

*Status:* Accidental.

### 4.2.12 Pink-eared Duck

Widely reported in peripheral, mainly freshwater wetlands throughout the Hunter Estuary. Often present in low numbers, but sometimes present in large numbers. The apparently large increase in the number of Pink-eared Ducks for HBOC's monthly shorebird counts (**Figure 4.2.12**) is caused by the more comprehensive surveys of Deep Pond carried out since June 2005.

*Recorded at:*

Ash Island (200)
Deep Pond (143)
Hexham Swamp (50+)
Hunter Wetlands Centre (42)
Irrawang Swamp (2)
Lenaghans Wetland (600)
Pambalong Nature Reserve (1-5)
Seaham Swamp Nature Reserve (6)
Swan Pond (7)
Tarro Swamp (300), (600 July 1985, Waterhouse 1986)
Teal Waters
Warabrook Wetland (300+)
Woodberry Swamp (4)

*Status:* Normally a bird of passage, although with the present drought, it could be reclassified as a resident for the Hunter Estuary. Recorded breeding only at Seaham Swamp Nature Reserve.

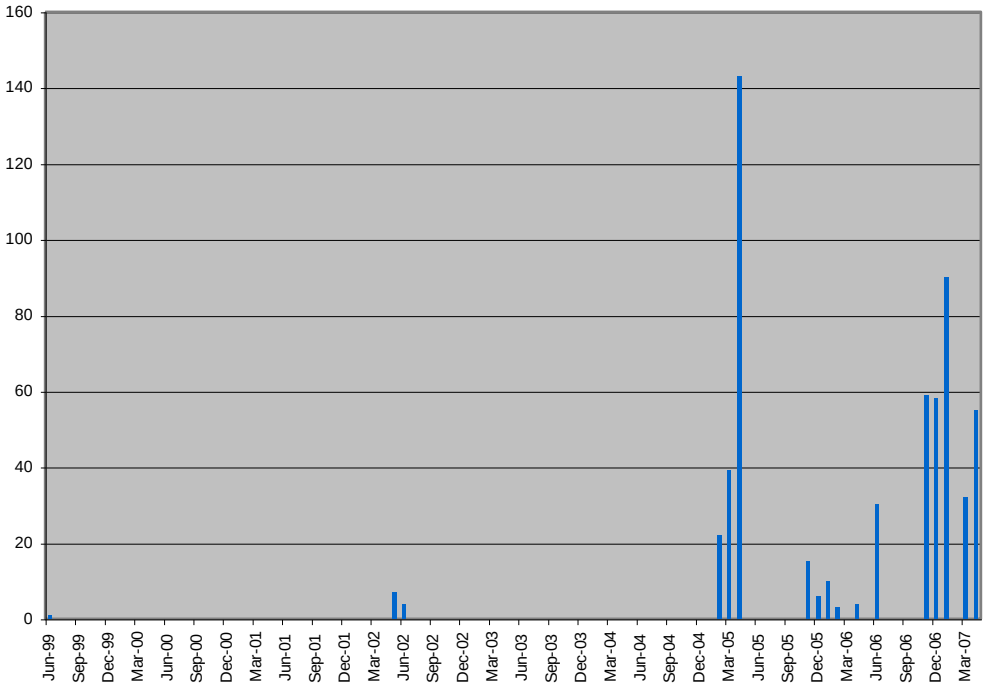


**Figure 4.2.12.** Pink-eared Duck totals for all locations monitored by HBOC's monthly shorebird counts, 1999 to 2007.

### 4.2.13 Hardhead

Hardheads are common in freshwater wetlands throughout the Hunter Estuary, sometimes in large numbers. The apparently large increase in the number of Hardheads for HBOC's monthly shorebird counts (**Figure 4.2.13**) is caused by the more comprehensive surveys of Deep Pond carried out since June 2005.

*Recorded at:*

Ash Island/Kooragang Island (611)
Bedminster (16)
BHP Moat (24)
Blue-billed Duck Pond (7)
Deep Pond (600)
Grahamstown Dam (300)
Hexham Swamp (201)
Hunter Wetlands Centre (100+)
Irrawang Swamp (84)
Lenaghans Wetland (100+)
Long Pond (30)
Market Swamp (80)
Newcastle Wetlands Reserve (110)
Newline Road Swamp (30), prior to causeway construction
Pambalong Nature Reserve (51-100)
Seaham Swamp Nature Reserve (21-50)
Stockton Sandspit (1)
Swan Pond (20)
Tank Paddock (2)
Tarro Swamp (50)
Teal Waters (20)
Warabrook Wetland (100+)
Woodberry Swamp

*Status:* Usual resident. Breeds in Hunter Region, but only one breeding record for the Hunter Estuary at the Hunter Wetlands Centre.

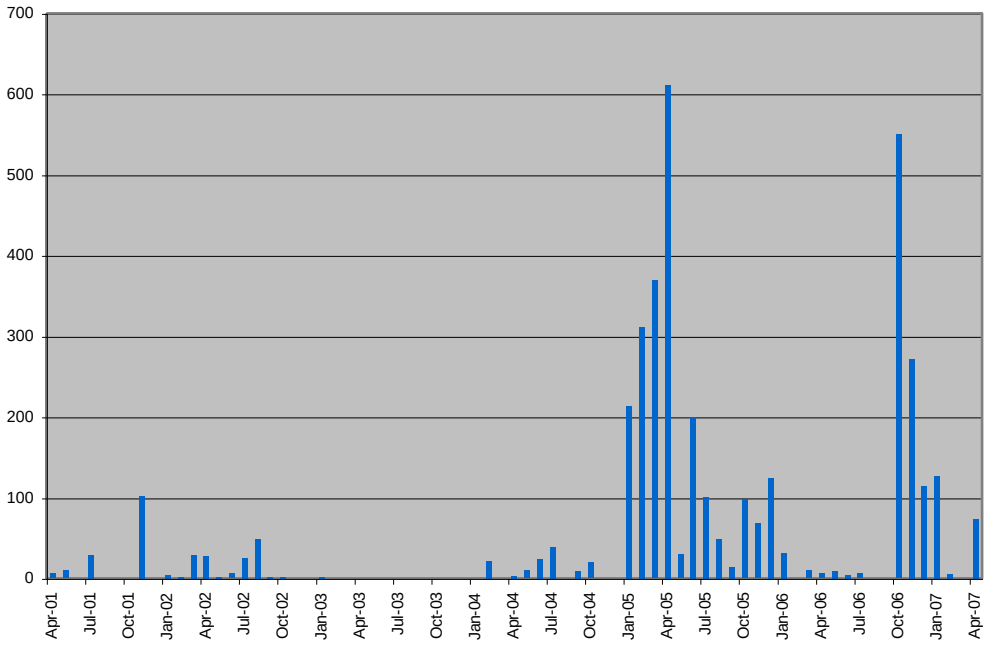


**Figure 4.2.13.** Hardhead totals for all locations monitored by HBOC's monthly shorebird counts, 1999 to 2007.

### 4.2.14 Australasian Grebe

Widely distributed in small to moderate numbers in freshwater wetlands throughout the Hunter Estuary. Grahamstown Dam is the most significant location with reports of large rafts consisting of 100 to 500 grebes. The apparently large increase in the number of Australasian Grebes for HBOC's monthly shorebird counts (**Figure 4.2.14**) is caused by the more comprehensive surveys of Deep Pond carried out since June 2005.

*Recorded at:*

Bedminster Swamp (16)
BHP Moat (8)
Big Pond (4)
Blue-billed Duck Pond (16)
Deep Pond (76)
Grahamstown Dam (519)
Hexham Swamp (71)
Hunter Wetlands Centre (21-50)
Irrawang Swamp (37)
Lenaghans Wetland (2-20)
Long Pond (15)
Market Swamp
Newcastle Wetlands Reserve (6-20)
Newline Road Swamp (21-50)
Pambalong Nature Reserve (20-30)
Seaham Swamp Nature Reserve (4)
Swan Pond (6)
Tank Paddock (3)
Tarro Swamp (20+)
Warabrook Wetland
Woodberry (12)

*Status:* Common resident. Recorded breeding at the Hunter Wetlands Centre, Pambalong Nature Reserve, Seaham Swamp, Hexham Swamp, Newcastle Wetlands Reserve and Warabrook Wetland, but would breed throughout the estuary at suitable wetlands.

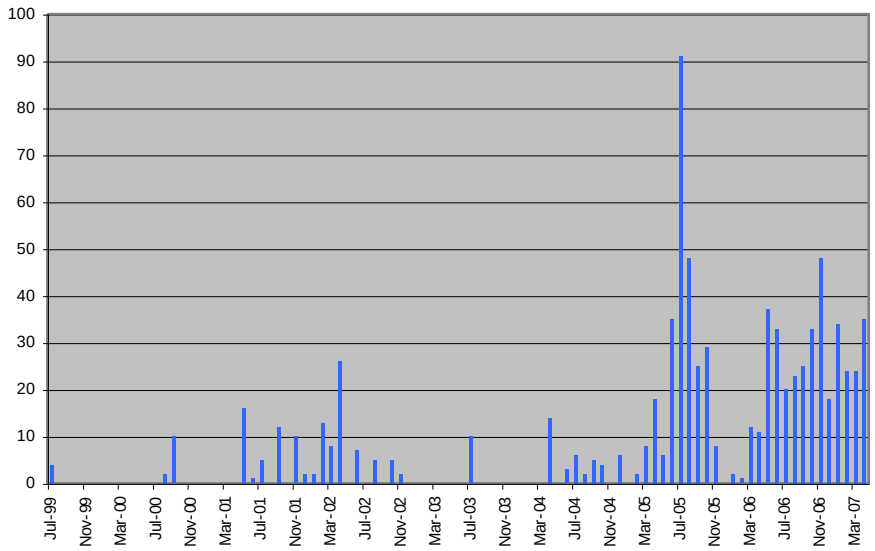


**Figure 4.2.14.** Australasian Grebe totals for all locations monitored by HBOC's monthly shorebird counts, 1999 to 2007.

### 4.2.15 Hoary-headed Grebe

Often reported from freshwater wetlands throughout the Hunter Estuary. Nearly always at Grahamstown Dam which is the most significant location for all three species of grebes. The apparently large increase in the number of Hoary-headed Grebes for HBOC's monthly shorebird counts (**Figure 4.2.15**) is caused by the more comprehensive surveys of Deep Pond carried out since June 2005.

*Recorded at:*

Ash Island (14)
Blue-billed Duck Pond (1)
Deep Pond (95)
Grahamstown Dam (300)
Hexham Swamp (25)
Hunter Wetlands Centre (1)
Irrawang Swamp (4)
Lenaghans Wetland (6-20)
Market Swamp
Newline Road Swamp (20+)
Pambalong Nature Reserve (2)
Seaham Swamp Nature Reserve
Tarro Swamp (14)
Warabrook Wetland (20+)

*Status:* Bird of passage, but often recorded in the Hunter Estuary. Only one breeding record at Warabrook Wetland, although Grahamstown Dam would be a possible breeding area.

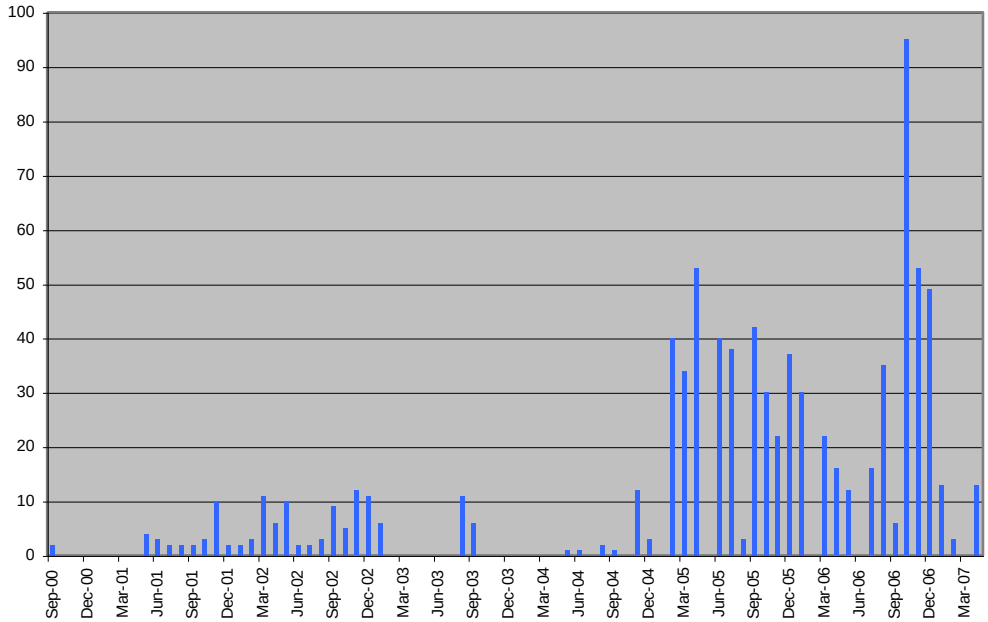


**Figure 4.2.15.** Hoary-headed Grebe totals for all locations monitored by HBOC's monthly shorebird counts, 1999 to 2007.

### 4.2.16 Great Crested Grebe

Nearly always observed at Grahamstown Dam, but recorded at only a couple of other places in the Hunter Estuary.

Recorded at:

Deep Pond (2)
Grahamstown Dam (250)
Pambalong Nature Reserve (6)
Stockton Channel (3), November 2007

*Status:* Resident. Breeding at Grahamstown Dam.

## 4.3 DARTER, CORMORANTS AND PELICAN

### 4.3.1 Darter

Regularly seen as singles or pairs, usually less than 5 at any one location, in both freshwater and saltwater habitats throughout the Hunter Estuary. Occasionally present on Swan Pond and Deep Pond.

*Notable numbers recorded at:*

Grahamstown Dam (6)
Hunter Wetlands Centre (15)
Kooragang Dykes (5)
Newcastle Wetlands Reserve (30)
Stockton Sandspit (6)

*Status:* Usual resident. Breeds at the Hunter Wetlands Centre (4 nests), Newcastle Wetlands Reserve (14 nests), Market Swamp (2 nests) and Seaham Swamp Nature Reserve.

### 4.3.2 Little Pied Cormorant

Little Pied Cormorants are widespread in small to moderate numbers throughout all freshwater and saltwater habitats in the Hunter Estuary. Little Pied Cormorants use many wetlands as nocturnal roosts.

*Notable numbers recorded at:*

Ash Island (51-100)
Grahamstown Dam (50+)
Hunter Wetlands Centre (21-50)
Kooragang Dykes (10)
Newcastle Wetlands Reserve (21-50)
Pambalong Nature Reserve (51-100)
Stockton Channel (13)

*Status:* Common resident. Breeding at the Hunter Wetlands Centre, Newcastle Wetlands Reserve and Market Swamp combined (40 nests) and Seaham Swamp Nature Reserve.

### 4.3.3 Pied Cormorant

Observed as single birds or in small numbers, mostly foraging in saltwater habitats throughout the Hunter Estuary. No records for Ash Island.

*Notable numbers recorded at:*

Grahamstown Dam (3)
Kooragang Dykes (26)
Market Swamp (21-50)
Newcastle Wetlands Reserve (78)
Stockton Channel (8)
Stockton Sandspit (21-50)

*Status:* Usual resident. Breeds mainly at Newcastle Wetlands Reserve (30 nests) and Market Swamp.

### 4.3.4 Little Black Cormorant

Little Black Cormorants are widespread throughout the Hunter Estuary, in small to moderate numbers, in both saltwater and freshwater habitats.

*Notable numbers recorded at:*

Deep Pond (20)
Fern Bay (13)
Grahamstown Dam (50+)
Hunter Wetlands Centre (50+)
Irrawang Swamp (21-50)
Market Swamp (100+)
Newcastle Wetlands Reserve (50+)
Seaham Swamp Nature Reserve (21-50)
Stockton Channel (15)
Stockton Sandspit (20)
Tarro Swamp (10)
Throsby Creek (21-50)

*Status:* Common resident. Breeds and night roosts at Newcastle Wetlands Reserve, Market Swamp (50 nests) and Hunter Wetlands Centre.

### 4.3.5 Great Cormorant

Great Cormorants are widespread in small numbers throughout the Hunter Estuary.

*Notable numbers recorded at:*

Ash Island (21-50)
Deep Pond (24)
Grahamstown Dam (8)
Hunter Wetlands Centre (56)
Kooragang Dykes (13)
Market Swamp (14, night roosting)
Newcastle Wetlands Reserve (64, night roosting)

*Status:* Common resident. Breeds at Newcastle Wetlands Reserve (40 nests), Market Swamp (2) and the Hunter Wetlands Centre.

### 4.3.6 Australian Pelican

Pelicans are widespread, in moderate numbers, throughout all wetlands in the Hunter Estuary. In general, more birds are present during summer than during the cooler months (**Figure 4.3.6**). The number of pelicans counted during HBOC's monthly shorebird counts has been fairly consistent except for a spectacular increase during the summer of 2002/03.

*Notable numbers recorded at:*

Ash Island (300)
Bedminster Swamp (28)
Big Pond (31)
Deep Pond (300)
Hexham Swamp (250)
Hunter Wetlands Centre (119)
Irrawang Swamp (32)
Kooragang Dykes (342)
Market Swamp (300+)
Newcastle Wetlands Reserve (197)
Newline Road Swamp (26), prior to causeway construction
Pambalong Nature Reserve (55)
Seaham Swamp Nature Reserve (23)
Stockton Channel (41)
Stockton Sandspit (100+)
Stony Point (20)
Swan Pond (150)
Tarro Swamp (21-50)
Woodberry Swamp (23)

*Status:* Common resident. No breeding records for the Hunter Estuary. Pelicans are reported to night roost at Newcastle Wetlands Reserve (197).

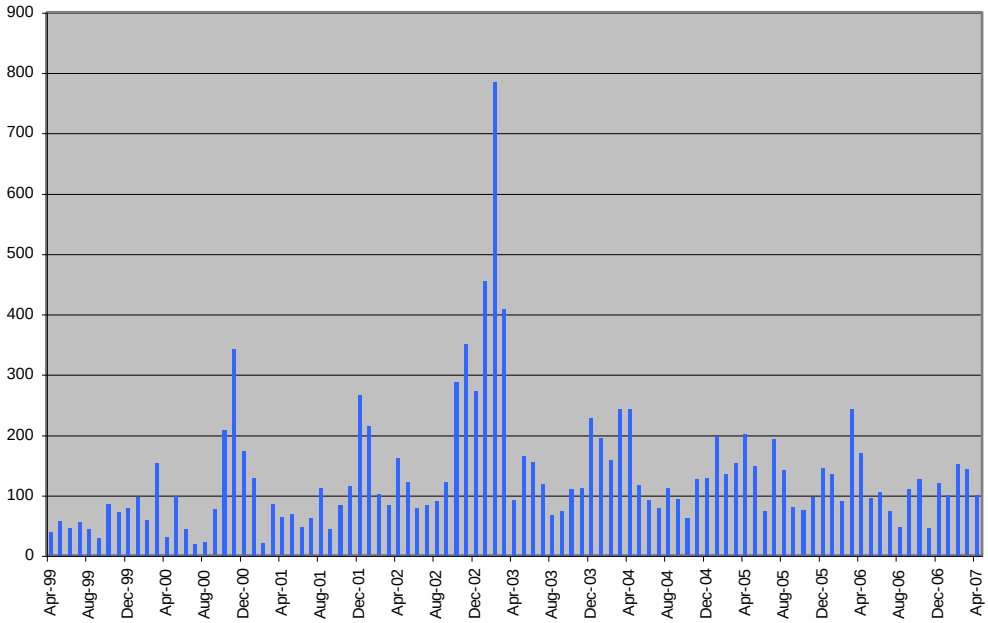


**Figure 4.3.6.** Australian Pelican totals for all locations monitored by HBOC's monthly shorebird counts, 1999 to 2007.

## 4.4 HERONS, EGRETS, BITTERNS AND SPOONBILLS

### 4.4.1 White-faced Heron

White-faced Herons are widespread throughout the Hunter Estuary, either singly, or in moderate numbers. They are particularly abundant on Ash Island ponds where as many as 40 are regularly observed and, sometimes, several hundred may be foraging. White-faced Herons tend to be more numerous in late autumn and winter (**Figure 4.4.1**).

*Notable numbers recorded at:*

Ash Island (200)
Fish Fry Flats (21)
Fullerton Cove (300)
Fullerton Cove Beach (161)
Hexham Swamp (229)
Hunter Wetlands Centre (21-50)
Irrawang Swamp (26)
Kooragang Dykes (35)
Melaleuca Swale (33)
Pambalong Nature Reserve (83)
Phoenix Flats (24)
Stockton Sandspit (80)
Swan Pond (40)
Tarro Swamp (21-50)
Wader Pond (50)

*Status:* Common resident. Nests recorded at Throsby Creek, Hunter Wetlands Centre and Newcastle Wetlands Reserve. Usually nests in trees away from water. Night roosts at Irrawang Swamp (21). Maximum peak numbers increased from 1999 until 2003, then suddenly decreased. Numbers have been gradually recovering since (**Figure 4.4.1**).

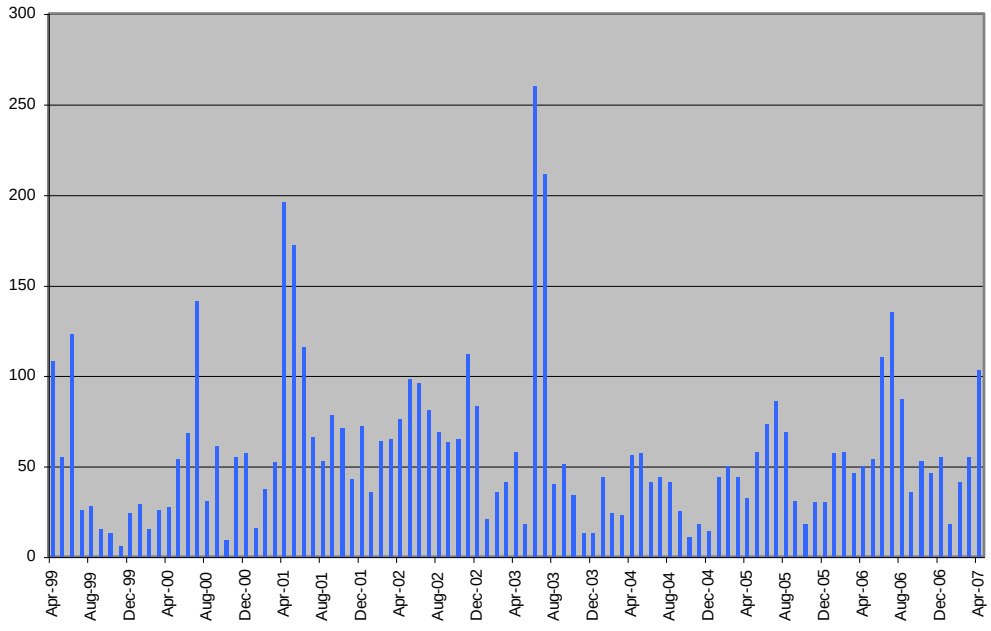


**Figure 4.4.1.** White-faced Heron totals for all locations monitored by HBOC's monthly shorebird counts, 1999 to 2007.

### 4.4.2 Little Egret

Little Egrets are present mostly as single birds, but widespread throughout the Hunter Estuary. Little Egrets are more numerous during late spring and summer (**Figure 4.4.2a**).

*Notable numbers recorded at:*

Ash Island (100-200)
Fish Fry Flats (5)
Fullerton Cove Beach (5)
Hunter Wetlands Centre (40 night roosting)
Kooragang Dykes (5)
Long Pond (6)
Newcastle Wetlands Reserve (21-50)
Pambalong Nature Reserve (3)
Stockton Sandspit (6+)
Swan Pond (6)

*Status:* Summer resident. During winter local egrets migrate away from their breeding area, but are replaced by egrets migrating from more northerly areas (Maddock 2003b). Recorded as nesting in the Hunter Estuary only at the Hunter Wetlands Centre (**Figure 4.4.2b**). The number of nests has declined considerably from 1988 to the present.

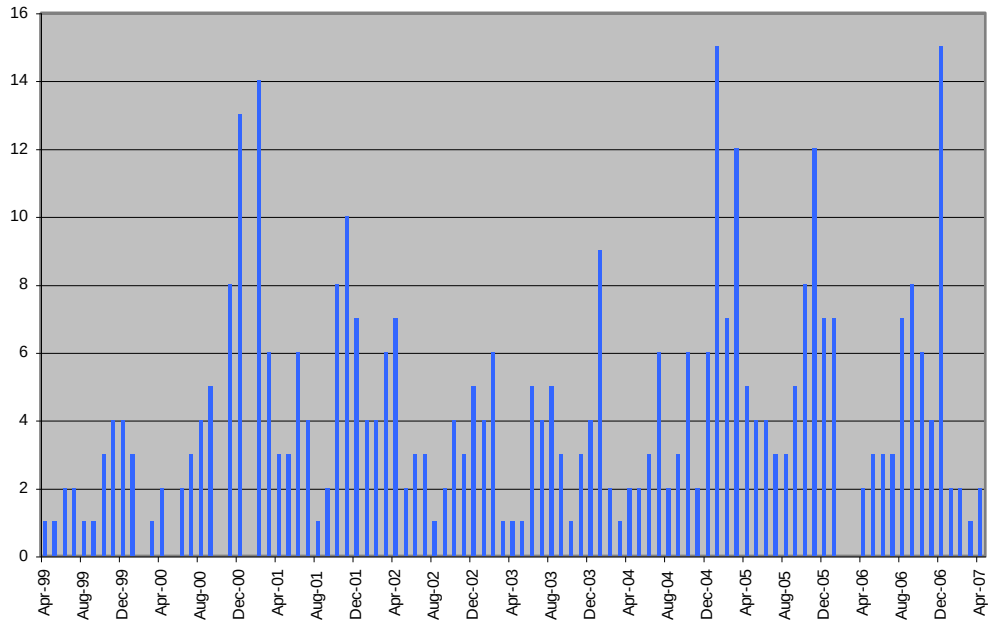


**Figure 4.4.2a.** Little Egret totals for all locations monitored by HBOC's monthly shorebird counts, 1999 to 2007.

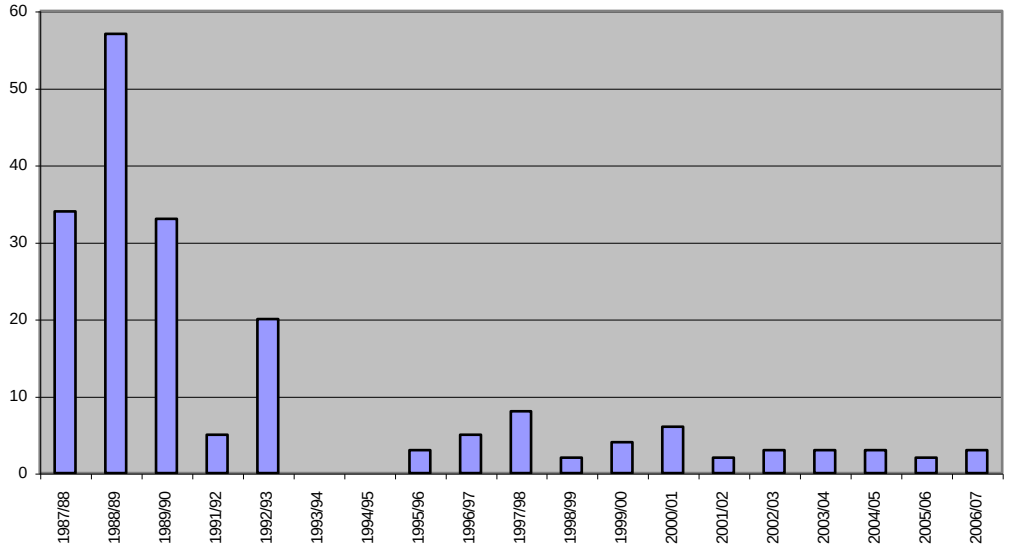


**Figure 4.4.2b.** Little Egret nests at the Hunter Wetlands Centre, 1988 to 2007.

### 4.4.3 White-necked Heron

White-necked Herons are widespread throughout the Hunter Estuary, usually seen as single birds, but sometimes in moderate numbers at wetlands with suitable conditions.

*Notable numbers recorded at:*

Ash Island (6-8)
Fullerton Cove (10)
Grahamstown Dam (3)
Hexham Swamp (88)
Hunter Wetlands Centre (1-2)
Lenaghans Wetland (40)
Newline Road Swamp (6-8)
Pambalong Nature Reserve (6)
Tank Paddock (19)
Tarro Swamp (6-9)
Woodberry Swamp (22)

*Status:* Resident. Not recorded breeding in the Hunter Estuary, but juveniles often observed.

### 4.4.4 Intermediate Egret

Intermediate Egrets are widespread throughout the Hunter Estuary in small to moderate numbers.

*Notable numbers recorded at:*

Ash Island (20)
Deep Pond (8)
Fish Fry Flats (7)
Grahamstown Dam (5)
Hexham Swamp (47)
Hunter Wetlands Centre (80)
Irrawang Swamp (8)
Lenaghans Wetland (14)
Pambalong Nature Reserve (15)
Seaham Swamp Nature Reserve (6)
Tank Paddock (4)
Tarro Swamp (10)
Warabrook Wetland (5)
Woodberry Swamp (5)

*Status:* Summer resident. During winter local egrets migrate away from their breeding area, but are replaced by egrets migrating from more northerly areas (Maddock 2003b). Breeds in the Hunter Estuary at the Hunter Wetlands Centre (**Figure 4.4.4**) and one record of nesting at Throsby Creek (1 nest). Note that there has been a dramatic decline in nesting at the Hunter Wetlands Centre since 453 nests were recorded during the 1988/89 season.

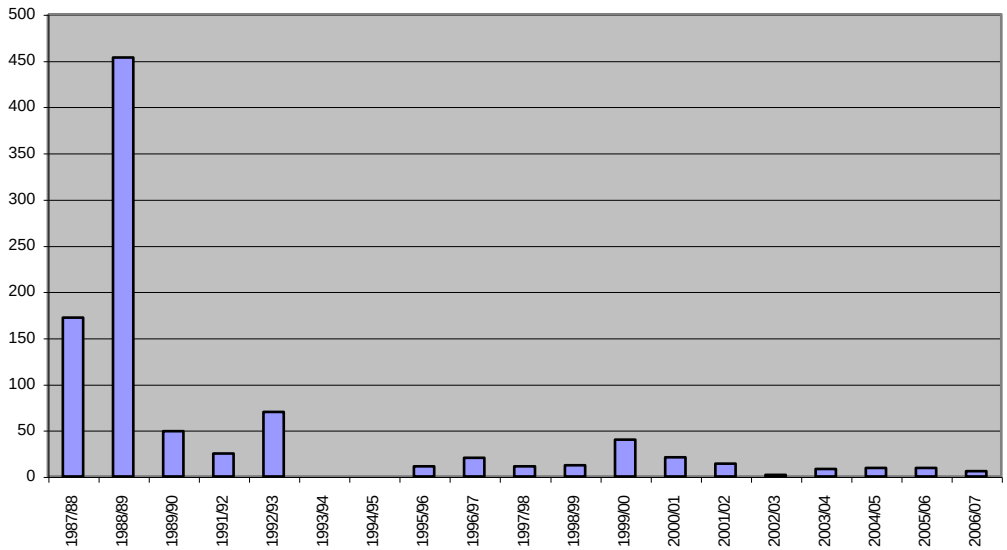


**Figure 4.4.4.** Intermediate Egret nests at the Hunter Wetlands Centre, 1988 to 2007.

### 4.4.5 Striated Heron

Striated Herons are not a common bird in the Hunter Estuary. They are generally recorded as single birds, or less commonly as pairs, in saltwater habitats.

*Recorded at:*

Ash Island
Fern Bay
Fullerton Cove Beach
Hunter Wetlands Centre
Kooragang Dykes (1)
Mosquito Creek
North Arm Sandflats
South Arm of Hunter River
Stockton Channel (2)
Stockton Sandspit (1)
Throsby Creek

*Status:* Resident. No breeding records for the Hunter Estuary, but it would almost certainly nest there.

### 4.4.6 Nankeen Night Heron

Nankeen Night Herons forage at night throughout the Hunter Estuary but, because of their nocturnal habits, there are few foraging observations. They have been observed foraging on Ash Island ponds such as Wader Pond, Swan Pond, Teal Waters and Tadpole Waters (**Figure 2.4.6**). Most records are of diurnally roosting birds. The largest roost exists at the Hunter Wetlands Centre where nearly 300 birds have been observed. Seaham Swamp Nature Reserve and the regularly monitored Ross Wallbridge Reserve (**Figure 2.6.3**) are also significant roosts.

*Recorded at:*

Fern Bay (21)
Hunter Wetlands Centre (293)
Kooragang Dyke Pond 2 (1)
Lenaghans Wetland (1)
Market Swamp
Newcastle University Wetland (1)
Newcastle Wetlands Reserve (1)
Pambalong Nature Reserve (60)
Ross Wallbridge Reserve (73), **Figure 2.6.3**
Seaham Swamp Nature Reserve (10)
Stockton Sandspit (21)
Tank Paddock
Throsby Creek (1-5)
Warabrook Wetland (1-5)

*Status:* Resident, although there is some evidence from fluctuating numbers (**Figure 2.6.3**) that they may be migratory to the Hunter Estuary from breeding areas in the Murray/Darling region (Max Maddock pers. comm.). No recent breeding records in the estuary. Recorded with dependant young at the Hunter Wetlands Centre, but no confirmation of actual nesting.

Previously recorded nesting at a Kooragang Island heronry, since destroyed by the construction of Stockton Bridge in the early 1970s.

### 4.4.7 Little Bittern

Little Bitterns are rarely reported because their cryptic behaviour and plumage makes them extremely difficult to observe in their preferred freshwater habitat of dense reeds.

*Recorded at:*

Hunter Wetlands Centre (1)
Newcastle Wetlands Reserve (2)
Pambalong Nature Reserve (1)

*Status:* Rare. Probably overlooked because of its cryptic habits, but unlikely to be numerous in the estuary.

### 4.4.8 Royal Spoonbill

Royal Spoonbills are frequently observed in both saltwater and freshwater habitats throughout the Hunter Estuary, usually in small numbers of less than 20 (**Figures 4.4.8a to 4.4.8e**).

*Notable numbers recorded at:*

Ash Island (22)
Bedminster Swamp (39)
BHP Moat 26)
Big Pond (30)
Deep Pond (20)
Fullerton Cove Beach (44)
Hunter Wetlands Centre (50)
Irrawang Swamp (41)
Kooragang Dykes (30)
Lenaghans Wetland (78)
Long Pond (25)
Newline Road Swamp (26), prior to causeway construction
Pambalong Nature Reserve (104)
Seaham Swamp Nature Reserve (60)
Stockton Sandspit (22)
Tarro Swamp (53)
Woodberry Swamp (21-50)

*Status:* Usual Resident. Nesting at Pambalong Nature Reserve; also reported feeding dependant fledged young at Irrawang Swamp and Seaham Swamp Nature Reserve. More reports of breeding, not necessarily near water, at locations surrounding the estuary, outside the area considered in this report. During HBOC's monthly shorebird counts the number of Royal Spoonbills increased to a maximum of 77 in March 2004 and then fell to 10 or 11 birds during the following May to July (**Figure 4.4.8e**). Numbers have since been slowly recovering. The dramatic fall in numbers during 2004 coincides with the time that the Red-necked Avocets also departed the estuary in response to inland rain.

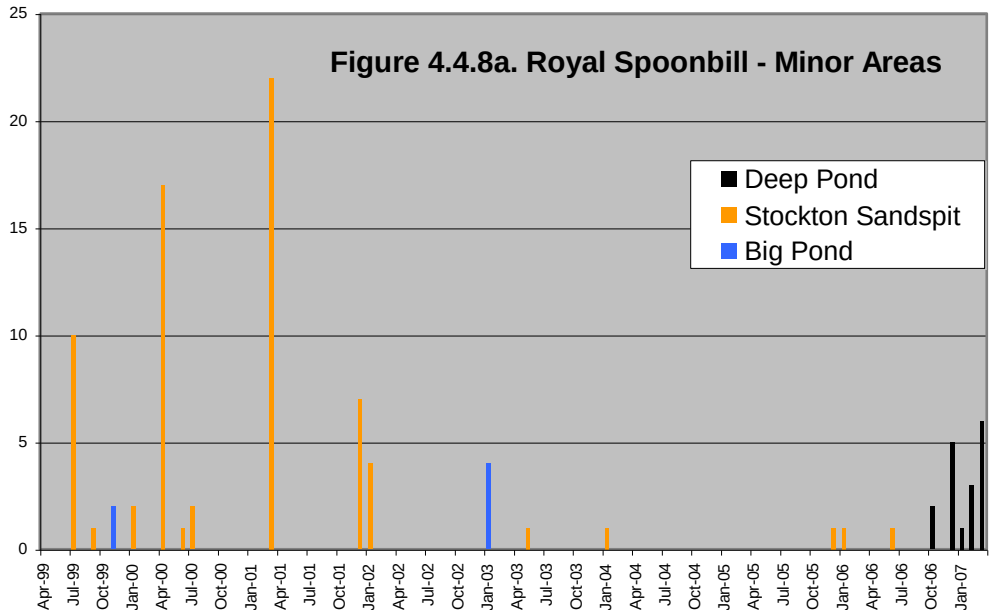
Figure 4.4.8a. Royal Spoonbill - Minor Areas
Deep Pond
Stockton Sandspit
Big Pond
25
20
15
10
5
0
Apr-99
Jul-99
Oct-99
Jan-00
Apr-00
Jul-00
Oct-00
Jan-01
Apr-01
Jul-01
Oct-01
Jan-02
Apr-02
Jul-02
Oct-02
Jan-03
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Apr-06
Jul-06
Oct-06
Jan-07

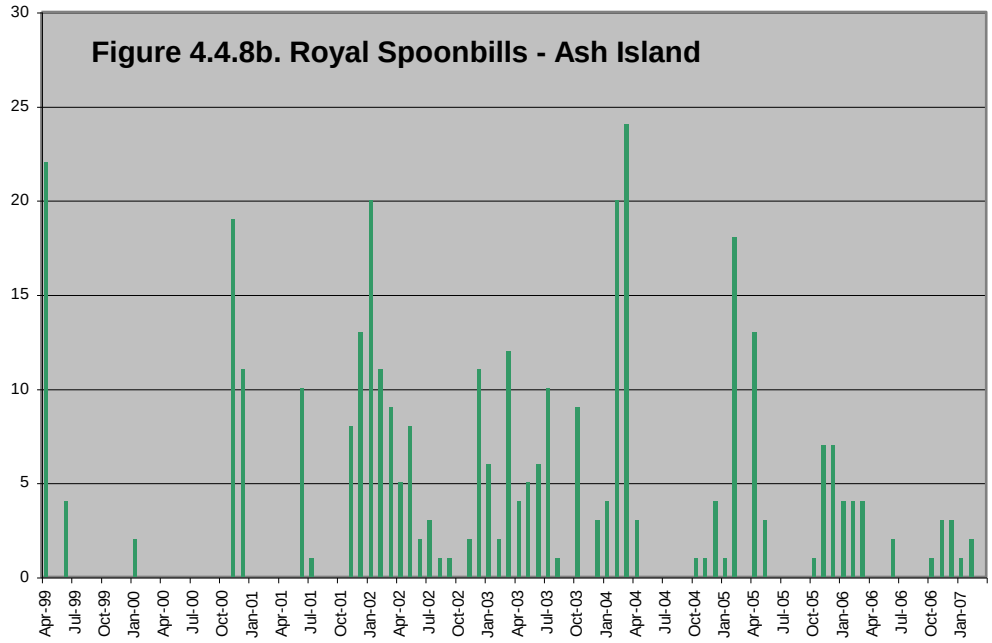
Figure 4.4.8b. Royal Spoonbills - Ash Island
30
25
20
15
10
5
0
Apr-99
Jul-99
Oct-99
Jan-00
Apr-00
Jul-00
Oct-00
Jan-01
Apr-01
Jul-01
Oct-01
Jan-02
Apr-02
Jul-02
Oct-02
Jan-03
Apr-03
Jul-03
Oct-03
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Apr-04
Jul-04
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Apr-05
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Jan-06
Apr-06
Jul-06
Oct-06
Jan-07

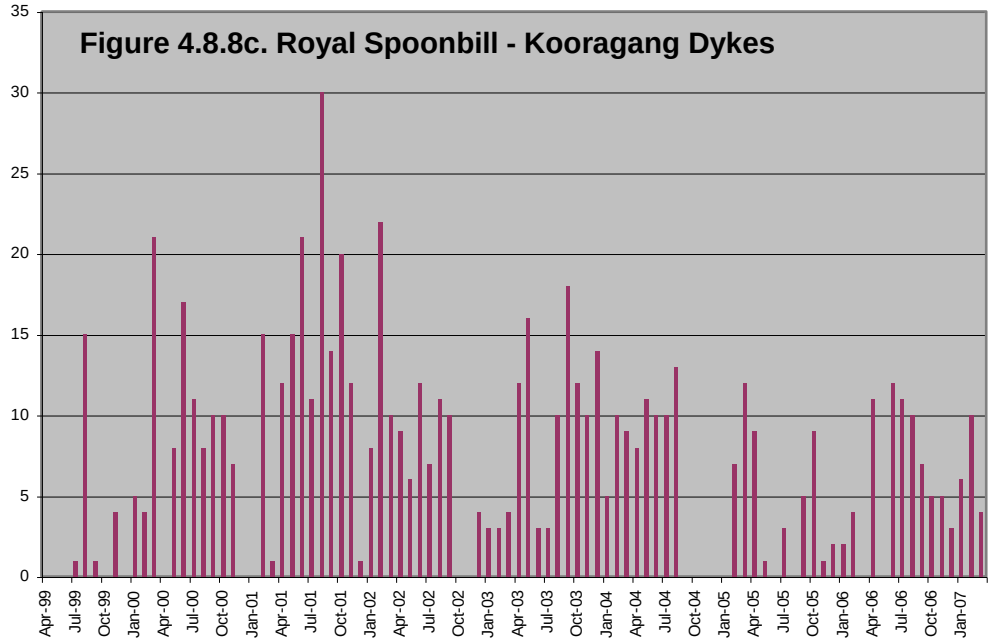
Figure 4.8.8c. Royal Spoonbill - Kooragang Dykes
35
30
25
20
15
10
5
0
Apr-99
Jul-99
Oct-99
Jan-00
Apr-00
Jul-00
Oct-00
Jan-01
Apr-01
Jul-01
Oct-01
Jan-02
Apr-02
Jul-02
Oct-02
Jan-03
Apr-03
Jul-03
Oct-03
Jan-04
Apr-04
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Jan-06
Apr-06
Jul-06
Oct-06
Jan-07

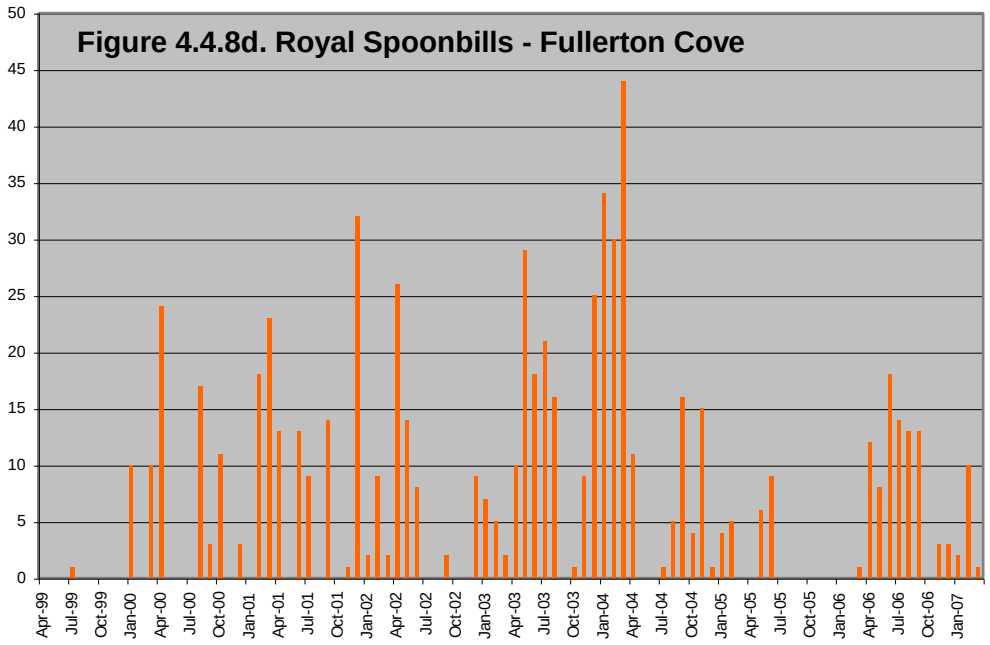
Figure 4.4.8d. Royal Spoonbills - Fullerton Cove
50
45
40
35
30
25
20
15
10
5
0
Apr-99
Jul-99
Oct-99
Jan-00
Apr-00
Jul-00
Oct-00
Jan-01
Apr-01
Jul-01
Oct-01
Jan-02
Apr-02
Jul-02
Oct-02
Jan-03
Apr-03
Jul-03
Oct-03
Jan-04
Apr-04
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Jan-05
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Oct-05
Jan-06
Apr-06
Jul-06
Oct-06
Jan-07

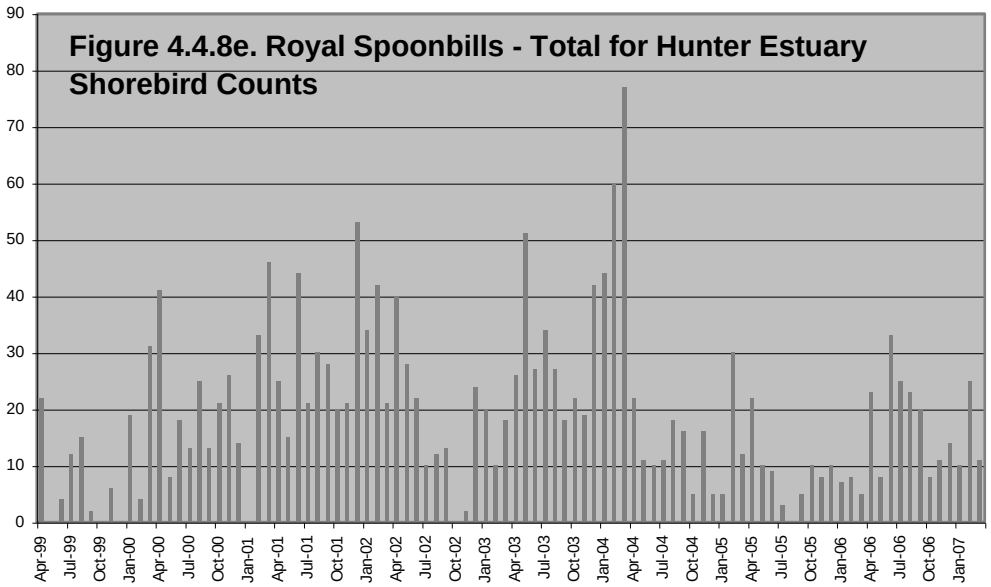


Figure 4.4.8e. Royal Spoonbills - Total for Hunter Estuary Shorebird Counts
90
80
70
60
50
40
30
20
10
0
Apr-99
Jul-99
Oct-99
Jan-00
Apr-00
Jul-00
Oct-00
Jan-01
Apr-01
Jul-01
Oct-01
Jan-02
Apr-02
Jul-02
Oct-02
Jan-03
Apr-03
Jul-03
Oct-03
Jan-04
Apr-04
Jul-04
Oct-04
Jan-05
Apr-05
Jul-05
Oct-05
Jan-06
Apr-06
Jul-06
Oct-06
Jan-07

### 4.4.9 Yellow-billed Spoonbill

Yellow-billed Spoonbills are more often reported in freshwater wetlands west of the Hunter Estuary. However, they have been recorded in small numbers throughout the estuary.

*Recorded at:*

Ash Island (7)
Bedminster Swamp (10)
Deep Pond (1)
Fullerton Cove (1-5)
Fullerton Cove Beach (3)
Hexham Swamp (12)
Hunter Wetlands Centre (4-8)
Irrawang Swamp (9)
Lenaghans Wetland (15)
Newcastle Wetlands Reserve (1)
Newline Road Swamp (7)
Pambalong Nature Reserve (20+)
Seaham Swamp Nature Reserve (4)
Tank Paddock (21-50)
Tarro Swamp (2)
Warabrook Wetland
Woodberry Swamp (5)

*Status:* Bird of passage. No breeding records in the Hunter Estuary except for one record of a juvenile at the Hunter Wetlands Centre (probably from a nest elsewhere).

## 4.5 RAPTORS

### 4.5.1 Pacific Baza

Although estuarine areas are not their preferred habitat, Pacific Bazas are occasionally reported as single birds, pairs or in threes (probably adults and a juvenile) throughout the Hunter Estuary. They are more often reported from areas surrounding the estuary.

*Recorded at:*

Carrington (3)
Grahamstown Dam (2)
Hexham Swamp (1)
Hunter Wetlands Centre
Newcastle University Wetland (3)
Newcastle Wetlands Reserve
Pambalong Nature Reserve (1)
Seaham Swamp Nature Reserve (3)
Tank Paddock (1)

*Status:* Uncommon resident. Nesting at Balickera and at Newcastle University Wetland.

### 4.5.2 Black-shouldered Kite

Black-shouldered Kites are commonly and widely observed hovering over grassy habitats adjacent to all wetlands throughout the Hunter Estuary, usually as pairs or single birds.

*Status:* Usual resident. Nests reported at Ash Island, Fern Bay and Newcastle Wetlands Reserve, but many other locations possible.

### 4.5.3 Black Kite

Black Kites are more common west of the Hunter Region and are rarely seen over the Hunter Estuary, usually as single birds. There were notable influxes during 2002/03 when as many as 25 birds were observed in the Maitland area and five were observed over Ash Island.

*Observed at:*

Ash Island (5)
Big Pond
Grahamstown Dam (10)
Hunter Wetlands Centre
Irrawang Swamp
Kooragang Island
Newcastle Wetlands Reserve
Stockton
Warabrook

*Status:* Rare. Does not breed in the Hunter Estuary.

### 4.5.4 Whistling Kite

Whistling Kites are one of the most common raptors in the Hunter Estuary, ranging over all saltwater and freshwater wetlands as well as a variety of non-wetland habitats surrounding the estuary. Observed singly, in pairs, and in numbers of up to six or more at any location.

*Notable numbers recorded at:*

Deep Pond (11)
Hexham Swamp (10)
Kooragang Dykes (4)
Tomago Wetlands (9)

*Status:* Common resident. Nesting at the Hunter Wetlands Centre, Newcastle Wetlands Reserve, Ash Island, and probably many other locations.

### 4.5.5 Brahminy Kite

Brahminy Kites are more common north of the Hunter Estuary, especially in northern New South Wales. One or two are occasionally observed in the estuary, usually flying along the North Arm of the Hunter River.

*Recorded at:*

Many locations along the North Arm from Newcastle Harbour up to Hexham Bridge
Ash Island
Fullerton Cove
Hexham Swamp
Hunter Wetlands Centre
Lenaghans Wetland
Newcastle Wetlands Reserve
Sandgate
Stockton Sandspit
Warabrook Wetland

*Status:* Accidental in the Hunter Estuary.

### 4.5.6 Spotted Harrier

Spotted Harriers are occasionally, but widely observed, singly or as pairs, over coarse grasslands adjacent to wetlands throughout the Hunter Estuary.

*Recorded at:*

Ash Island
Balickera
Big Pond (2)
Deep Pond (2)
Fern Bay
Hexham
Hexham Swamp
Hunter Wetlands Centre
Irrawang Swamp
Raymond Terrace
Tomago Wetlands

*Status:* Uncommon resident. Not recorded breeding in the Hunter Estuary.

### 4.5.7 Swamp Harrier

Swamp Harriers are often observed over all saltwater and freshwater wetlands throughout the Hunter Estuary, usually singly, in pairs or as three birds.

*Notable numbers recorded at:*

Deep Pond (3)
Grahamstown Dam (4)
Hexham Swamp (7)
Hunter Wetlands Centre (4)
Irrawang Swamp (10)
Lenaghans Wetland (8)
Pambalong Nature Reserve (3)

*Status:* Usual resident. Only one record of breeding (unsuccessful) at Big Pond in 2006 and reported nest building in the Tarro/Shortland area. Swamp Harrier's nests are difficult to detect because they are located on the ground in coarse grass or dense reeds. Therefore, they would almost certainly nest undetected at many locations throughout the estuary where dense reeds and coarse grass occur.

### 4.5.8 Brown Goshawk

Although not an estuary-dependant bird, Brown Goshawks are occasionally reported throughout the Hunter Estuary, usually as single birds.

*Status:* Resident. Breeding at the Hunter Wetlands Centre and Balickera.

### 4.5.9 Grey Goshawk

Grey Goshawks are occasionally seen in the Hunter Estuary and usually as single birds. Most often seen at Newcastle University Wetland where they regularly nest.

*Status:* Resident. Breeding at Newcastle University Wetland.

### 4.5.10 Collared Sparrowhawk

Collared Sparrowhawks are occasionally observed in the Hunter Estuary, usually as single birds.

*Most often recorded at:*

Ash Island/Kooragang Island
Balickera
Grahamstown Dam (2)
Hunter Wetlands Centre (1)
Seaham Swamp Nature Reserve
Thornton
Shortland

*Status:* Resident. No breeding records in the Hunter Estuary.

### 4.5.11 Wedge-tailed Eagle

Wedge-tailed Eagles are mostly observed west of the Hunter Estuary or flying over peripheral wetlands surrounding the estuary such as Hexham Swamp and Grahamstown Dam. Rarely seen over Ash Island or downstream parts of the estuary.

*Status:* Usual resident for the Hunter Region, but a bird of passage for the Hunter Estuary.

### 4.5.12 Little Eagle

Little Eagles are widespread and moderately often seen in the Hunter Estuary, usually as single birds. Recorded over-flying most areas in the estuary.

*Status:* Resident for Hunter Region, but a bird of passage for the Hunter Estuary.

### 4.5.13 Brown Falcon

Brown Falcons are moderately often observed in the Hunter Estuary, usually as single birds or pairs. Recorded at most wetlands throughout the estuary, but rarely over the main channels of the lower estuary.

*Status:* Resident. No breeding records for the Hunter Estuary.

### 4.5.14 Australian Hobby

Australian Hobbys can be seen across the entire Hunter Estuary, usually as singles or pairs, frequenting both freshwater swamps and the main saltwater channels

*Status:* Resident. No breeding records for the Hunter Estuary.

### 4.5.15 Black Falcon

Although the Black Falcon is a rare bird in the Hunter Estuary, the frequency of observations has increased over the last few years. Mostly seen as singles or pairs on Ash Island, and also Hexham Swamp. Observations around the Morpeth area indicate that the Black Falcon may be nesting in that vicinity (Mike Newman and Ann Lindsey pers. comm.).

*Status:* Rare. No breeding records in the Hunter Estuary.

### 4.5.16 Peregrine Falcon

Peregrine Falcons are often seen widely throughout the entire Hunter Estuary, usually as single birds or as pairs.

*Status:* Resident. Nested at Tomago and Ash Island.

### 4.5.17 Nankeen Kestrel

Nankeen Kestrels are widely and frequently observed over the entire Hunter Estuary, usually as singles or pairs, and usually foraging over grassy habitats between wetlands. Notable numbers recorded at Hexham Swamp (7).

*Status:* Usual resident. Nested at Warabrook, but many other locations are probable.

## 4.6 CRAKES, RAILS AND HENS

### 4.6.1 Buff-banded Rail

Buff-banded Rails are secretive birds of densely vegetated wetland margins. They are seldom seen, but are probably present in most freshwater wetlands throughout the Hunter Estuary. Usually seen as single birds.

*Recorded at:*

Antennae Wetland
Ash Island (2)
Balickera
Deep Pond (1)
Fish Fry Flats (1)
Hexham Swamp
Hunter Wetlands Centre (3)
Irrawang Swamp (1)
Market Swamp
Newcastle Wetlands Reserve (1)
Pambalong Nature Reserve (1)
Seaham Swamp Nature Reserve (1)
Sharpies Flat
Stockton
Swan Pond (1)
Tank Paddock (2)
Warabrook Wetland (2)

*Status:* Uncommon resident. Probably more common than records indicate. Nested at Hunter Wetlands Centre and Balickera.

### 4.6.2 Lewin's Rail

Lewin's Rail are seldom observed, usually as single birds. They are secretive birds of densely vegetated wetland margins.

*Recorded at:*

Ash Island
Deep Pond (1)
Hunter Wetlands Centre
Newcastle University Wetland
Newcastle Wetlands Reserve
Reedy Pond (1), immediately south of Swan Pond on Ash Island

*Status:* Resident, probably overlooked because of its secretive habits, and probably more common than records indicate. Only one breeding record at the Hunter Wetlands Centre.

### 4.6.3 Baillon's Crake

Baillon's Crakes are seldom observed in the Hunter Estuary, usually as single birds, rarely as a pair. As many as eight birds were observed on Water Ribbon Swale, Ash Island. They are probably more common than records indicate as they are secretive birds that inhabit densely vegetated wetland margins.

*Recorded at:*

Antennae Wetland
Ash Island
BHP Moat
Bittern Corner (1), northeast of Swan Pond
Blue-billed Duck Pond (1)
Grahamstown Dam (1)
Hunter Wetlands Centre (8)
Lenaghans Wetland
Newcastle Wetlands Reserve (2)
Pambalong Nature Reserve (1)
Tarro Swamp
Wader Pond west (1)
Warabrook Wetland (1)
Water Ribbon Swale, Ash Island (8)

*Status:* Resident, probably overlooked. No breeding recorded although suitable breeding habitat exists in the estuary.

### 4.6.4 Australian Spotted Crake

Australian Spotted Crakes are seldom observed in the Hunter Estuary, usually as single birds, rarely as a pair. They are probably more common than records indicate as they are secretive birds that inhabit densely vegetated wetland margins.

*Recorded at:*

Ash Island (4-6)
Deep Pond (5)
Hunter Wetlands Centre (3)
Lenaghans Wetland (2)
Newcastle Wetlands Reserve (1)
Pambalong Nature Reserve (1)
Swan Pond (4), Crake Corner and at southern margin of Swan Pond
Tomago (1)
Water Ribbon Swale, Ash Island (1)

*Status:* Resident, probably overlooked. No breeding recorded although suitable breeding habitat exists in the estuary.

### 4.6.5 Spotless Crake

Spotless Crakes are seldom observed in the Hunter Estuary, usually as single birds, rarely as a pair. They are probably more common than records indicate as they are secretive birds that inhabit densely vegetated wetland margins.

*Recorded at:*

Ash Island (1)
Hunter Wetlands Centre (6)
Market Swamp (2)
Newcastle Wetland Reserve (1)
Pambalong Nature Reserve (1)
Swan Pond (1), northern and southern margins
Warabrook Wetland

Water Ribbon Swale, Ash Island (1)

*Status:* Resident, probably overlooked. Breeding at the Hunter Wetlands Centre.

### 4.6.6 Purple Swamphen

Purple Swamphens are very common and widespread throughout all freshwater wetlands in the Hunter Estuary, often in moderately large numbers.

*Notable numbers recorded at:*

Deep Pond (57)
Hunter Wetlands Centre (100+)
Lenaghans Wetland (200+)
Long Pond (16)
Market Swamp (50+)
Newcastle Wetlands Reserve (21-50)
Pambalong Nature Reserve (100+)
Tank Paddock (21-50)
Warabrook Wetland (100+)

*Status:* Common resident. Recorded breeding at the Hunter Wetlands Centre, Newcastle Wetlands Reserve, Market Swamp, Warabrook Wetland, Ash Island, Pambalong Nature Reserve, Tank Paddock, Seaham Swamp, Grahamstowm Dam and Newcastle University Wetland.

### 4.6.7 Dusky Moorhen

Dusky Moorhens are common and widespread throughout all freshwater wetlands in the Hunter Estuary, sometimes in moderate numbers.

*Notable numbers recorded at:*

Hunter Wetlands Centre (200+)
Lenaghans Wetland (20+)
Market Swamp (20+)
Newcastle Wetlands Reserve (21-100)
Seaham Swamp Nature Reserve (20+)
Warabrook Wetland (50+)

*Status:* Common resident. Recorded breeding at Hunter Wetlands Centre, Market Swamp, Newcastle Wetlands Reserve, Pambalong Nature Reserve, Lenaghans Wetland, Warabrook Wetland and Newcastle University Wetland.

### 4.6.8 Black-tailed Native-hen

Black-tailed Native-hens are rarely seen in the Hunter Estuary, usually as single birds or as a pair. They are more common in western New South Wales.

*Recorded at:*

Ash Island (2)
Hunter Wetlands Centre (1)
Pambalong Nature Reserve (1)
Swan Pond (1), southern part

*Status:* Accidental. Does not breed in the Hunter Estuary.

### 4.6.9 Eurasian Coot

Eurasian Coot are common and widespread in most freshwater wetlands throughout the Hunter Estuary, usually in moderate numbers and often in large numbers.

*Notable numbers recorded at:*

Ash Island (100+), Swan and Wader Ponds
Bedminster Swamp (42)
Blue-billed Duck Pond (200)
Deep Pond (107)
Grahamstown Dam (400)
Hexham Swamp (200+)
Hunter Wetlands Centre (100-300)
Irrawang Swamp (59)
Lenaghans Wetland (100)
Newcastle Wetlands Reserve (120-180)
Tarro Swamp (100)
Warabrook Wetland (100+)

*Status:* Usual resident. Breeding at the Hunter Wetlands Centre, Market Swamp, Newcastle Wetlands Reserve, Seaham Swamp Nature Reserve and Warabrook Wetland.

## 4.7 BUTTON-QUAIL

### 4.7.1 Red-backed Button-quail

Red-backed Button-quail are at the southern limit of their Australian distribution in the Hunter Estuary. Recently, as many as three have been observed in coarse grassland near Deep Pond in the Kooragang Island Industrial Area. Although not a wetland-dependant bird, Red-backed Button-quail may be more common in estuarine grasslands than records indicate.

*Status:* Recorded as accidental for the Hunter Region, but it is possible that Red-backed Button-quail may be uncommon residents in the Hunter Estuary as little is known about this cryptic species.

## 4.8 SHOREBIRDS

### 4.8.1 Lesser Yellowlegs

A single Lesser Yellowlegs has been seen on Swan Pond, Ash Island only once, but over a three-day period. It has not been included in the discussion of Significant Species because it is the only migratory shorebird recorded in the Hunter Estuary that is not on the JAMBA/CAMBA lists.

*Status:* Accidental summer migrant. Breeds in the northern hemisphere.

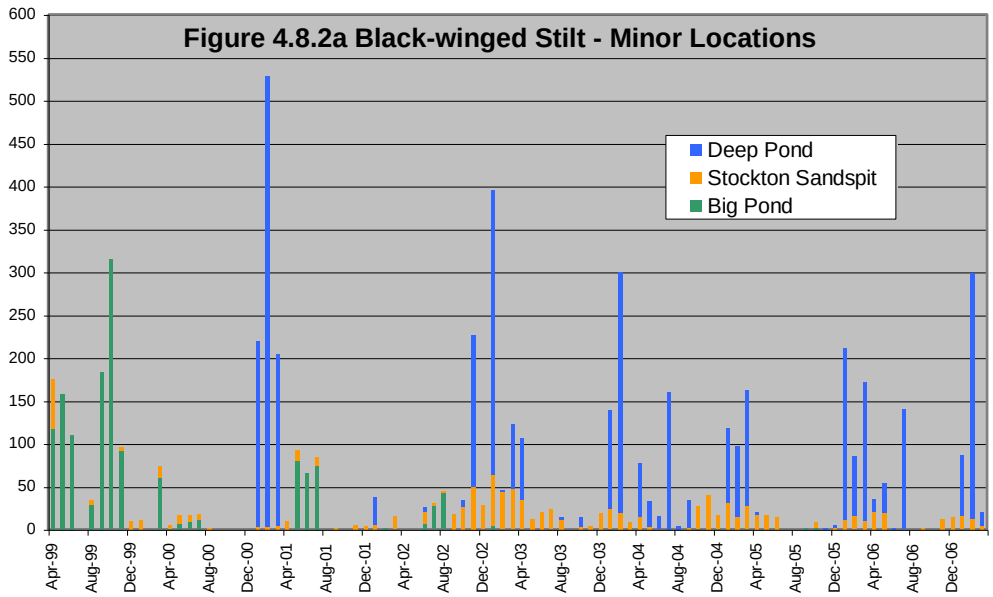
## 4.8.2 Black-winged Stilt

Black-winged Stilts are one of the most numerous shorebirds in the Hunter Estuary (**Figure 4.8.2e**). They are widely distributed in both freshwater and saltwater wetlands throughout the estuary. Stilts are known to forage in Fullerton Cove.

*Notable numbers recorded at:*

Ash Island (200)
Big Pond (100), former breeding site now lost to industrial development
Deep Pond (525)
Fish Fry Flats (33)
Fullerton Cove Beach (200)
Hexham Swamp (~1,000)
Hunter Wetlands Centre (51-100)
Irrawang Swamp (80)
Kooragang Dykes (370)
Lenaghans Wetland (100+)
Newline Road Swamp (36)
Pambalong Nature Reserve (100-200)
Seaham Swamp (9)
Sharpies Flat (30)
Stockton Sandspit (100)
Swan Pond (1,117)
Tarro Swamp (400)
Wader Pond (451)
Woodberry Swamp (743)

*Status:* Usual resident. Recorded breeding at Market Swamp, Newcastle Wetlands Reserve, Ash Island, Stockton Sandspit, and probably nesting at many other locations. During HBOC's monthly shorebird counts the number of stilts gradually increased to a maximum of 910 during 2003 and then decreased to the present maximum of 416 during 2006/07 (**Figure 4.8.2e**). Previous records are sparse, but suggest that higher numbers were present during the late 1970s and early 1980s (**Figure 4.8.2f**).



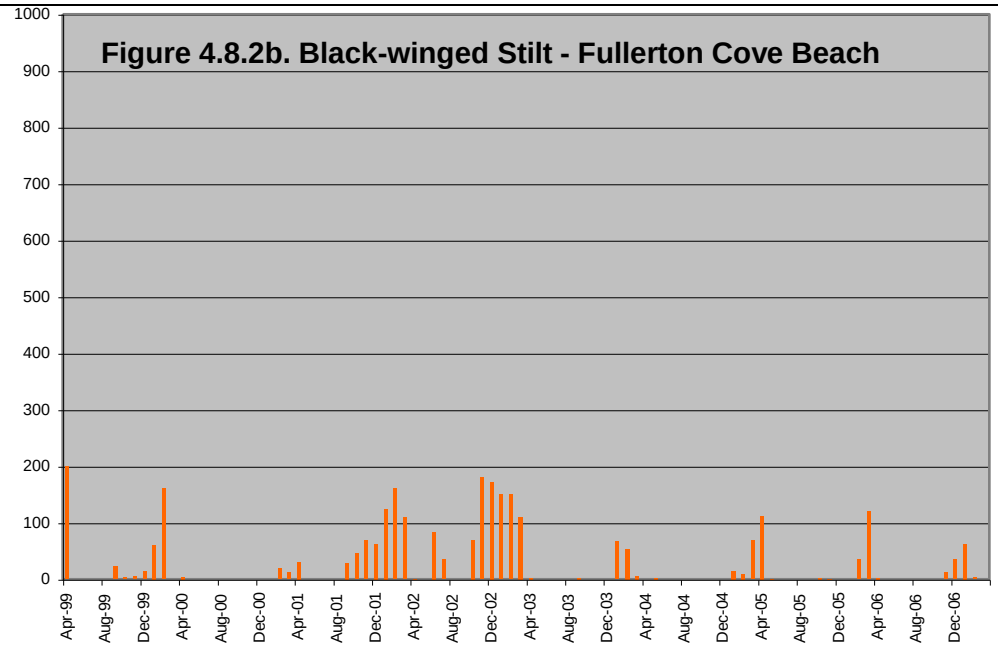


Figure 4.8.2b. Black-winged Stilt - Fullerton Cove Beach
1000
900
800
700
600
500
400
300
200
100
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
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Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

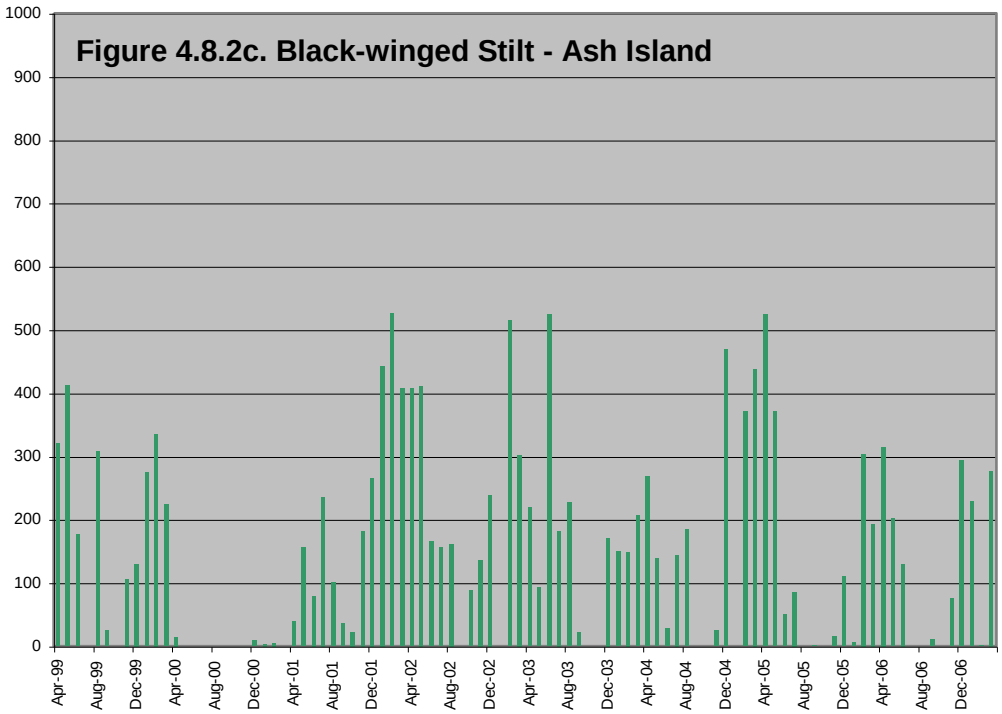
Figure 4.8.2c. Black-winged Stilt - Ash Island
1000
900
800
700
600
500
400
300
200
100
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

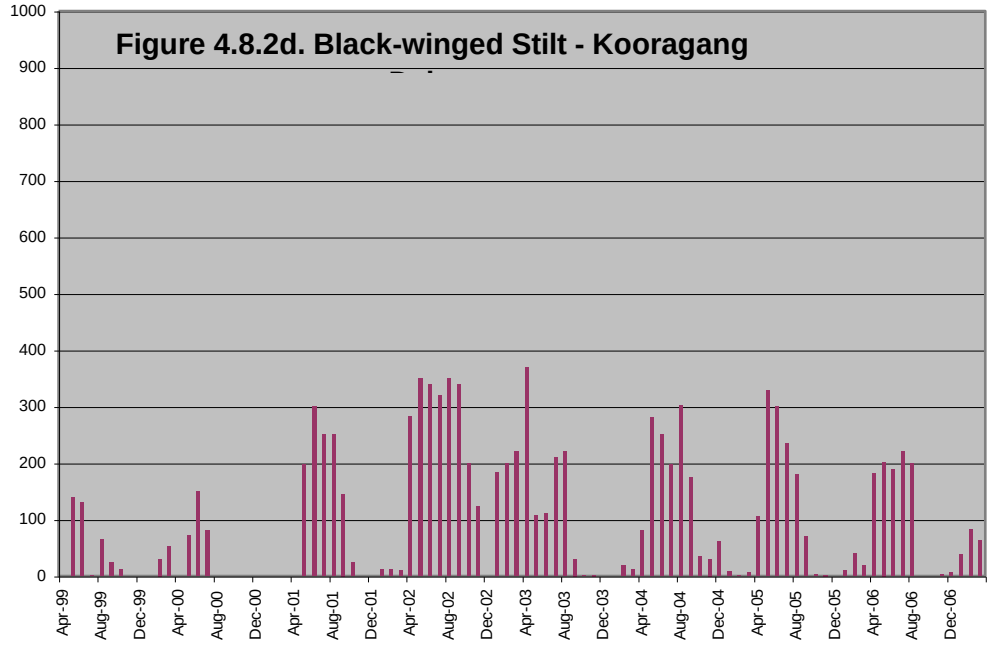
Figure 4.8.2d. Black-winged Stilt - Kooragang
1000
900
800
700
600
500
400
300
200
100
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
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Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

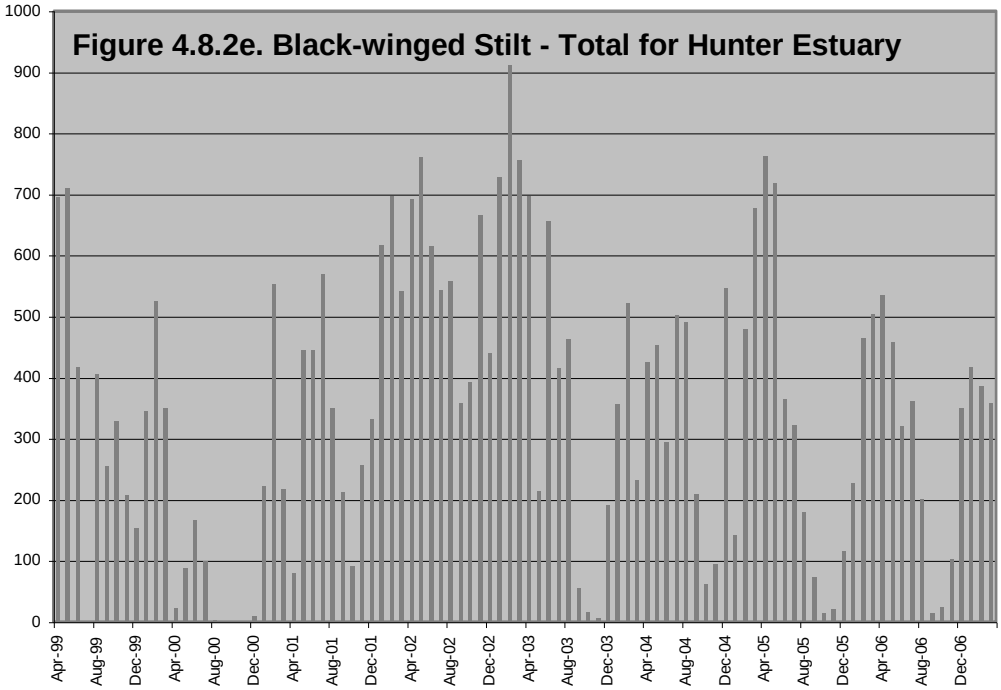
Figure 4.8.2e. Black-winged Stilt - Total for Hunter Estuary
1000
900
800
700
600
500
400
300
200
100
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

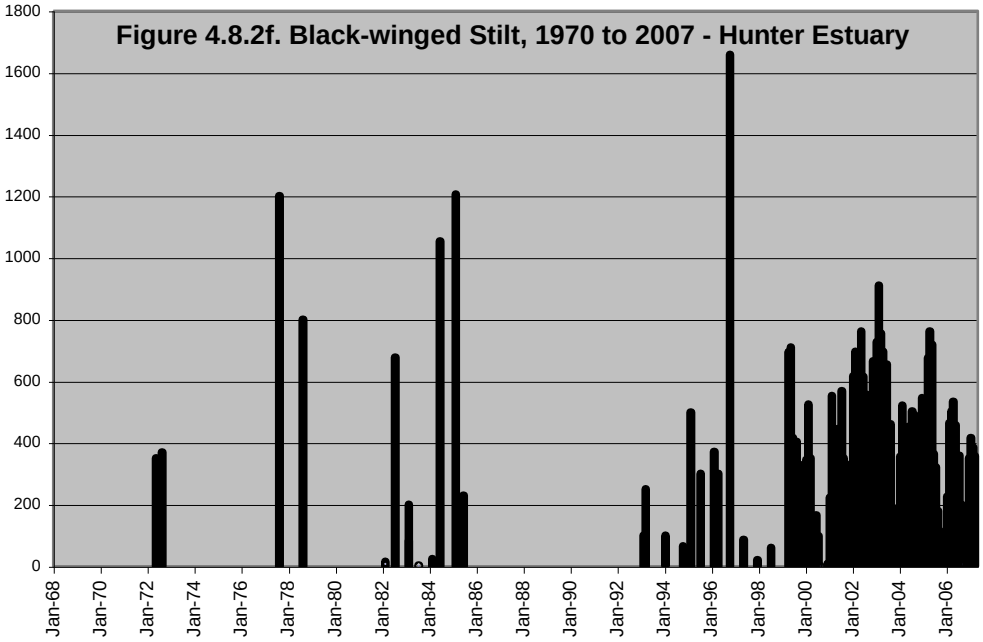
Figure 4.8.2f. Black-winged Stilt, 1970 to 2007 - Hunter Estuary
1800
1600
1400
1200
1000
800
600
400
200
0
Jan-68
Jan-70
Jan-72
Jan-74
Jan-76
Jan-78
Jan-80
Jan-82
Jan-84
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06

### 4.8.3 Banded Stilt

One or two Banded Stilts are occasionally recorded as immature and adult birds.

*Recorded at:*

Ash Island (2)
Big Pond (2)
Kooragang Dykes (1)
Kooragang Island
Stockton Sandspit
Swan Pond (1)
Wader Pond (1)

*Status:* Accidental. Does not breed in the Hunter Estuary.

### 4.8.4 Red-capped Plover

Red-capped Plovers are commonly recorded in small to moderate numbers in many saltwater habitats throughout the Hunter Estuary. More birds tend to be present during summer than winter.

*Recorded at:*

Ash Island (32)
Big Pond (100 in 1998)
Deep Pond (53)
Fullerton Cove (64)
Kooragang Island
Phoenix Flats (44)
Stockton Sandspit (22)
Swan Pond (24)
Throsby Creek (2)
Wader Pond (30)

*Status:* Usual resident. Recorded breeding at Stockton Sandspit, Ash Island and Fern Bay. There has been a noticeable increase in the number of Red-capped Plovers in the Hunter Estuary since HBOC shorebird surveys commenced in 1999, to a total of 73 in 2005 (**Figure 4.8.4d**). Since then numbers have declined to less than 20 during early 2007. Historical data is difficult to interpret, but there appear to have been higher counts of Red-capped Plovers from 1970 to 1999 than in the following 18 years (**Figure 4.8.4e**).

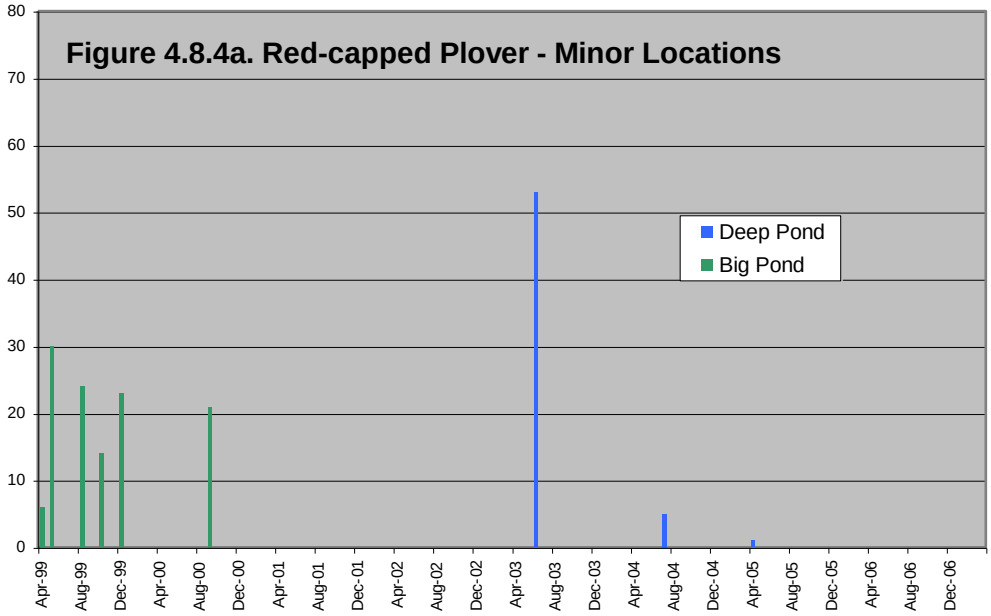
Figure 4.8.4a. Red-capped Plover - Minor Locations
Deep Pond
Big Pond
0
10
20
30
40
50
60
70
80
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
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Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

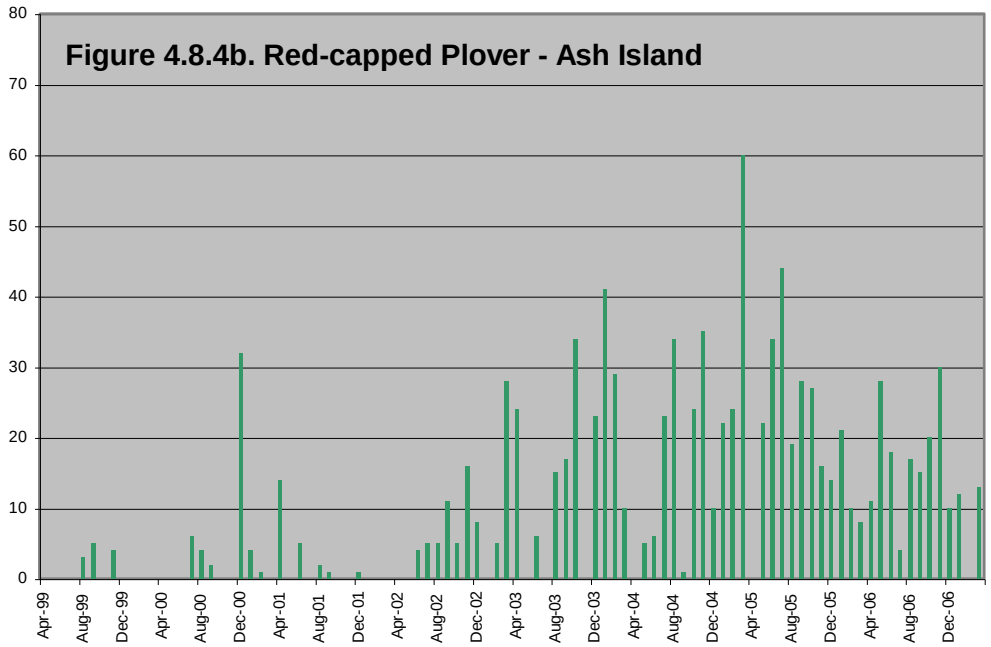
Figure 4.8.4b. Red-capped Plover - Ash Island
0
10
20
30
40
50
60
70
80
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
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Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

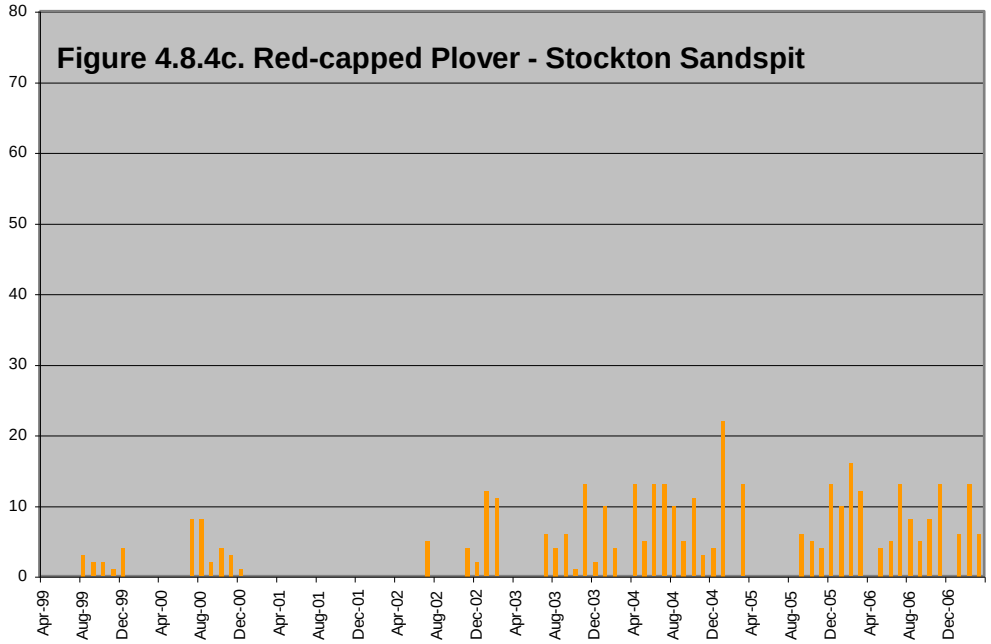


Figure 4.8.4c. Red-capped Plover - Stockton Sandspit
0
10
20
30
40
50
60
70
80
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

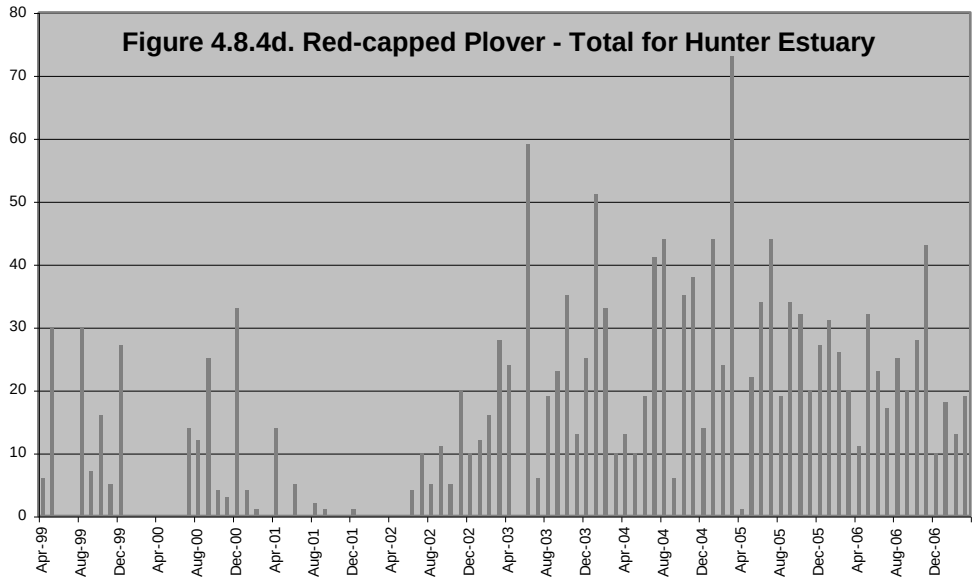


Figure 4.8.4d. Red-capped Plover - Total for Hunter Estuary
80
70
60
50
40
30
20
10
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

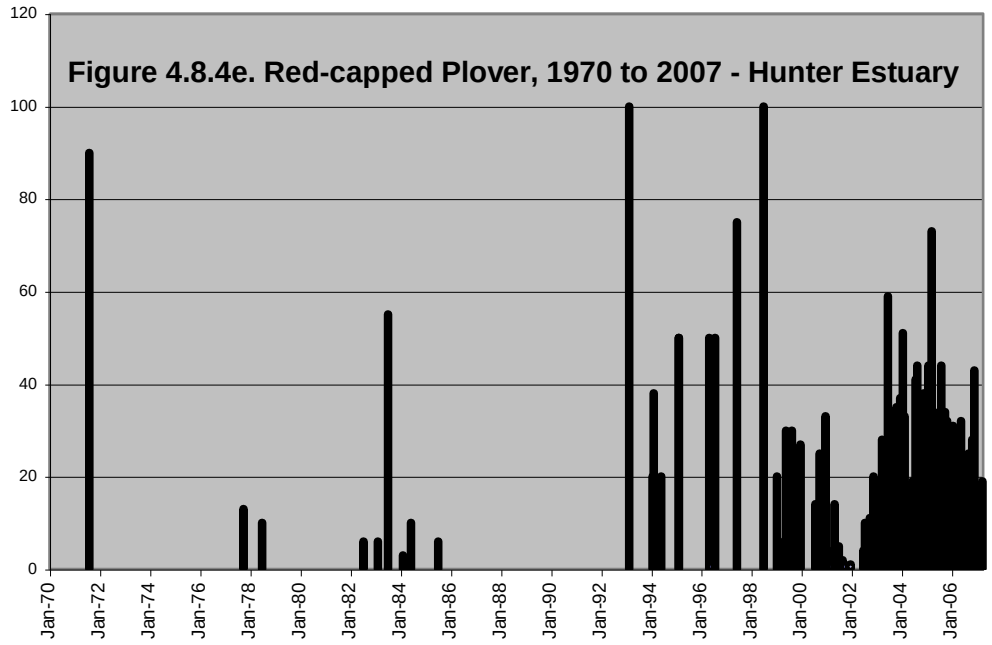


Figure 4.8.4e. Red-capped Plover, 1970 to 2007 - Hunter Estuary
120
100
80
60
40
20
0
Jan-70
Jan-72
Jan-74
Jan-76
Jan-78
Jan-80
Jan-82
Jan-84
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06

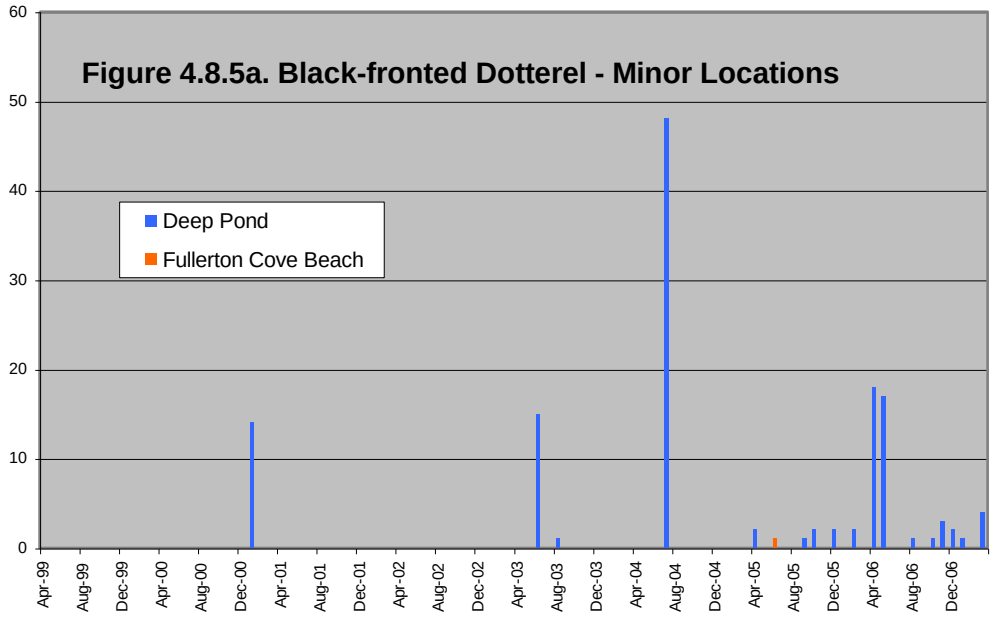
## 4.8.5 Black-fronted Dotterel

Black-fronted Dotterels are commonly recorded as pairs or in small to moderate numbers in many freshwater habitats throughout the Hunter Estuary (**Figures 4.8.5a to 4.8.5c**). More birds are recorded during winter than during spring and summer when they are nesting.

*Notable numbers recorded at:*

Ash Island (30-40)
Big Pond (50 in 1997)
Deep Pond (48)
Fish Fry (15)
Hunter Wetlands Centre (37)
Irrawang Swamp (11)
Lenaghans Wetland (7)
Long Pond (10)
Pambalong Nature Reserve (60)
Swan Pond (35)
Teal Waters
Wader Pond (18)

*Status:* Resident for the Hunter Region, but usual resident for the Hunter Estuary. Recorded breeding at the Hunter Wetlands Centre, Ash Island and Pambalong Nature Reserve. A maximum of from 40 to 50 birds have been recorded regularly during the HBOC's shorebird counts (**Figure 4.8.5d**). Black-fronted Dotterels have been recorded more frequently in the Hunter Estuary since 1999 (**Figure 4.8.5e**). This may be a function of monitoring Ash Island ponds in addition to the high-tide shorebirds roosts since 1999.



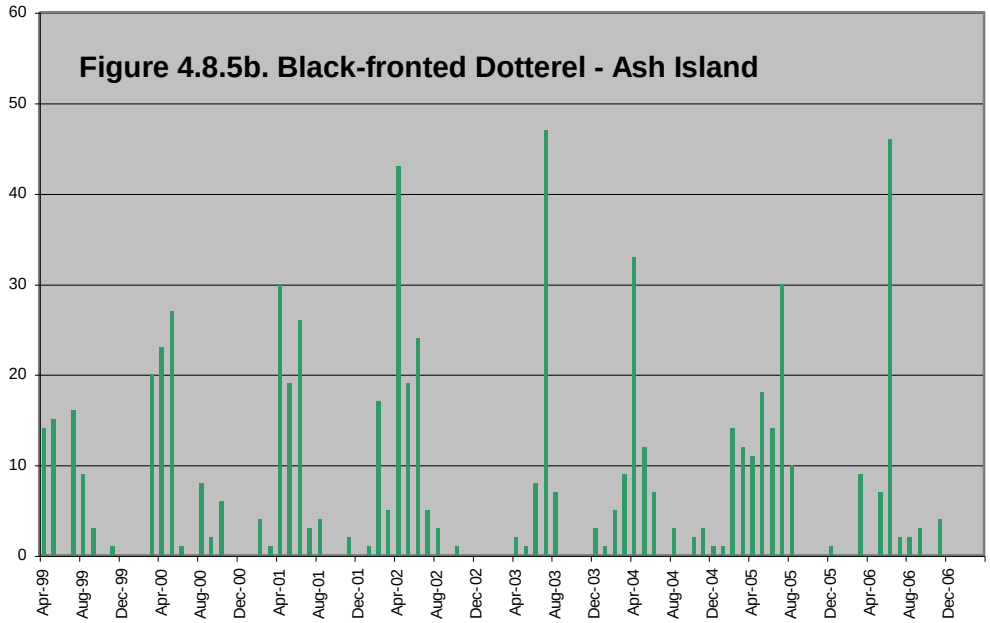


Figure 4.8.5b. Black-fronted Dotterel - Ash Island
60
50
40
30
20
10
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

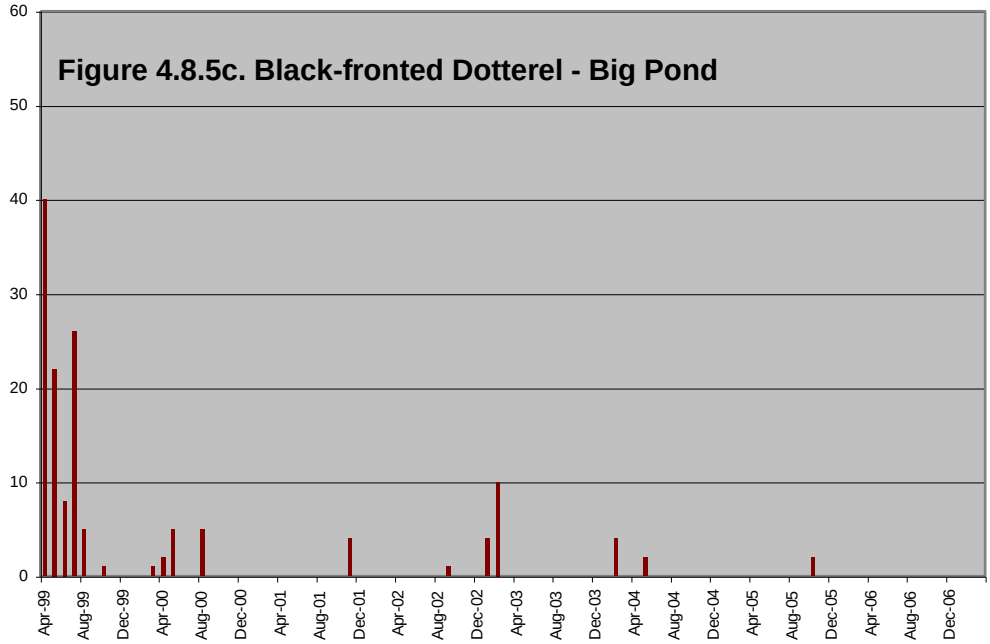


Figure 4.8.5c. Black-fronted Dotterel - Big Pond
60
50
40
30
20
10
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

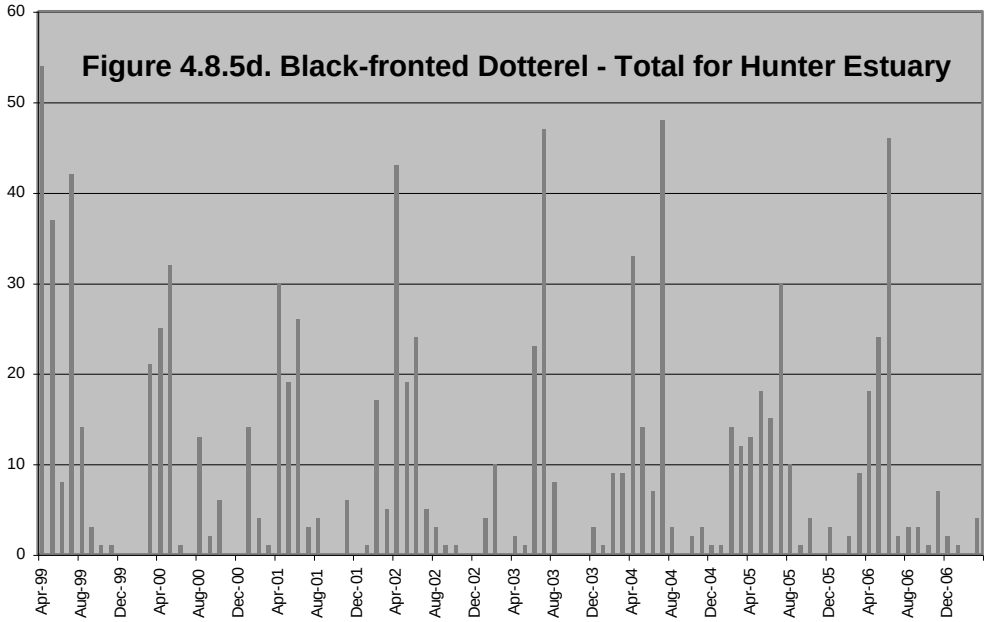


Figure 4.8.5d. Black-fronted Dotterel - Total for Hunter Estuary
60
50
40
30
20
10
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

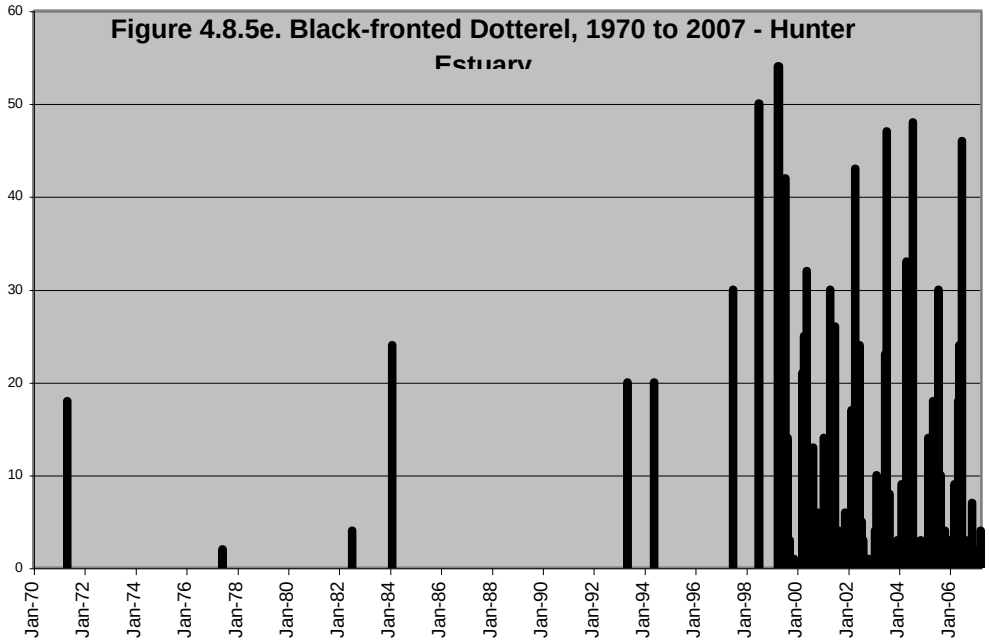


Figure 4.8.5e. Black-fronted Dotterel, 1970 to 2007 - Hunter Estuary
60
50
40
30
20
10
0
Jan-70
Jan-72
Jan-74
Jan-76
Jan-78
Jan-80
Jan-82
Jan-84
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06

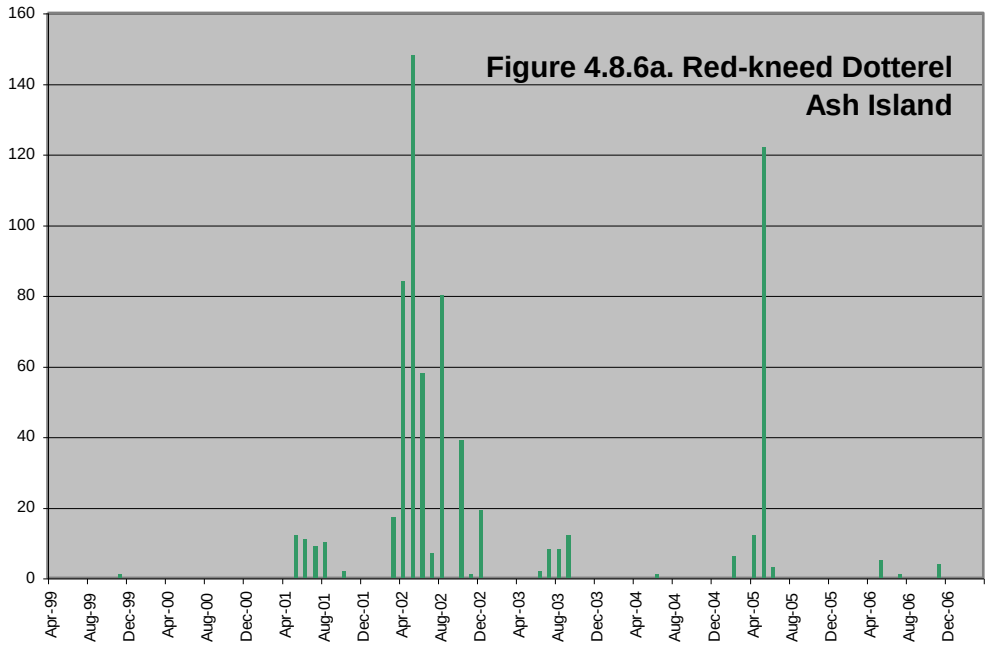
## 4.8.6 Red-kneed Dotterel

Red-kneed Dotterels are occasionally reported in small numbers at many freshwater wetlands throughout the Hunter Estuary. Sporadic irruptions of larger numbers are occasionally recorded, usually in May (e.g. 148 during May 2002, **Figure 4.8.6c**). There are long periods when no Red-kneed Dotterels are recorded in the estuary. They are generally absent in summer.

*Notable numbers recorded at:*

Ash Island (148)
Big Pond (30 in 1998)
Deep Pond (4)
Fish Fry Flats (63)
Hexham Swamp (6-12)
Hunter Wetlands Centre (40)
Irrawang Swamp (6-13)
Lenaghans Wetland (1-5)
Market Swamp (3)
Milhams Pond (122)
Pambalong Nature Reserve (6-12)
Stockton Sandspit (1-5)
Swan Pond (75)
Wader Pond (78)

*Status:* Bird of passage. Recorded breeding at Ash Island, Hunter Wetlands Centre, Market Swamp and Pambalong Nature Reserve. Because of the irruptive occurrence and the limited residence time of Red-kneed Dotterels, trends in numbers in the Hunter Estuary are not apparent for the period 1999 to 2007 (**Figures 4.8.6a to 4.8.6c**). However, historical records show that higher numbers have been recorded after 2002 than before (**Figure 4.8.6d**). This apparent trend should be treated with caution as data is sparse.



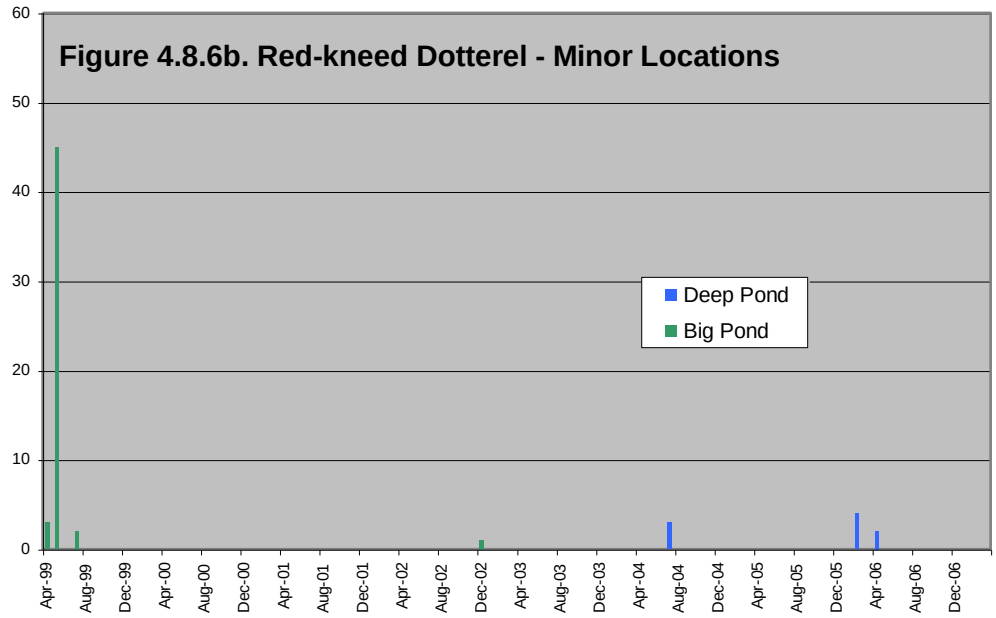


Figure 4.8.6b. Red-kneed Dotterel - Minor Locations
Deep Pond
Big Pond
60
50
40
30
20
10
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

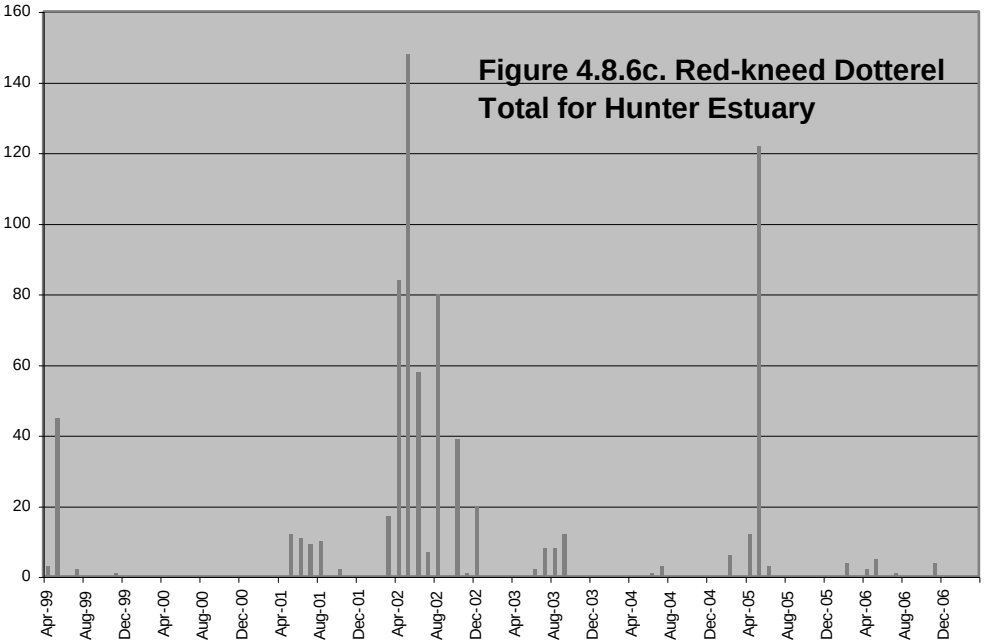


Figure 4.8.6c. Red-kneed Dotterel
Total for Hunter Estuary
160
140
120
100
80
60
40
20
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

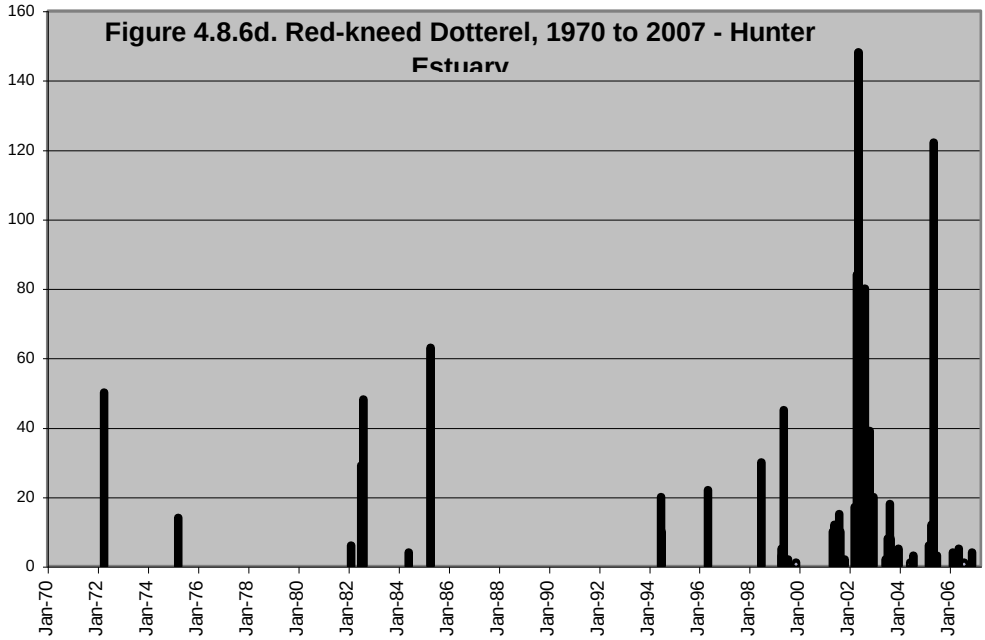


Figure 4.8.6d. Red-kneed Dotterel, 1970 to 2007 - Hunter
Estuary
160
140
120
100
80
60
40
20
0
Jan-70
Jan-72
Jan-74
Jan-76
Jan-78
Jan-80
Jan-82
Jan-84
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06

### 4.8.7 Banded Lapwing

Small numbers (up to 25) of Banded Lapwing are occasionally seen foraging on the upper Hunter Estuary floodplain to the north of Maitland, but rarely in the lower estuary.

*Recorded at:*

Kooragang Island (7)
Wader Pond (2)
Woodberry (4)

*Status:* Rare bird of passage. Does not breed in the Hunter Estuary.

### 4.8.8 Masked Lapwing

Masked Lapwings are very common and widespread in both freshwater and saltwater habitats throughout the Hunter Estuary, usually in small to moderate numbers (**Figures 4.8.8a to 4.8.8d**). There is a cyclical seasonal trend in numbers recorded in the estuary. Numbers increase to a maximum from late spring into summer and then decrease from late winter into spring when the birds disperse to nest.

*Notable numbers recorded at:*

Ash Island (100+)
Deep Pond (33)
Fullerton Cove Beach (44)
Hexham Swamp (87)
Hunter Wetlands Centre (23)
Kooragang Dykes (59)
Lenaghans Wetland (17)
Long Pond (24)
Milhams Pond (19)
Newcastle Wetlands Reserve (6-20)
Pambalong Nature Reserve (134)
Scotts Point (30+), roosting, also opposite on Hexham Island
Stockton Channel (20)
Stockton Sandspit (22)
Tarro Swamp (16)
Wader Pond (38)
Woodberry Swamp (21-50)

*Status:* Common resident. Recorded breeding at Market Swamp, Ash Island and Hunter Wetlands Centre, but also nests at many other locations. Since HBOC's monthly shorebird counts commenced in 1999 the number of lapwings at monitored locations appears to have steadily increased to a maximum of 168 in 2005/06 (**Figure 4.8.8e**). Because lapwings are widely dispersed throughout the estuary, many more than the recorded number would be present at any one time. Prior to the mid-1990s it appears that Masked Lapwings were probably not systematically recorded at as many locations as present. Therefore, it is difficult to be certain about historical trends (**Figure 4.8.8f**).

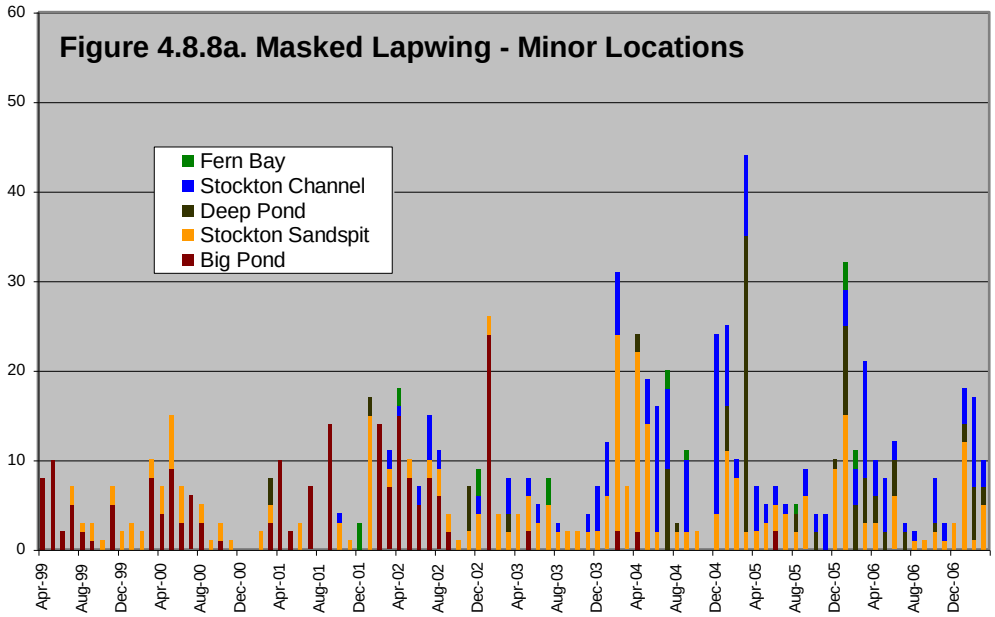


Figure 4.8.8a. Masked Lapwing - Minor Locations
Fern Bay
Stockton Channel
Deep Pond
Stockton Sandspit
Big Pond
60
50
40
30
20
10
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

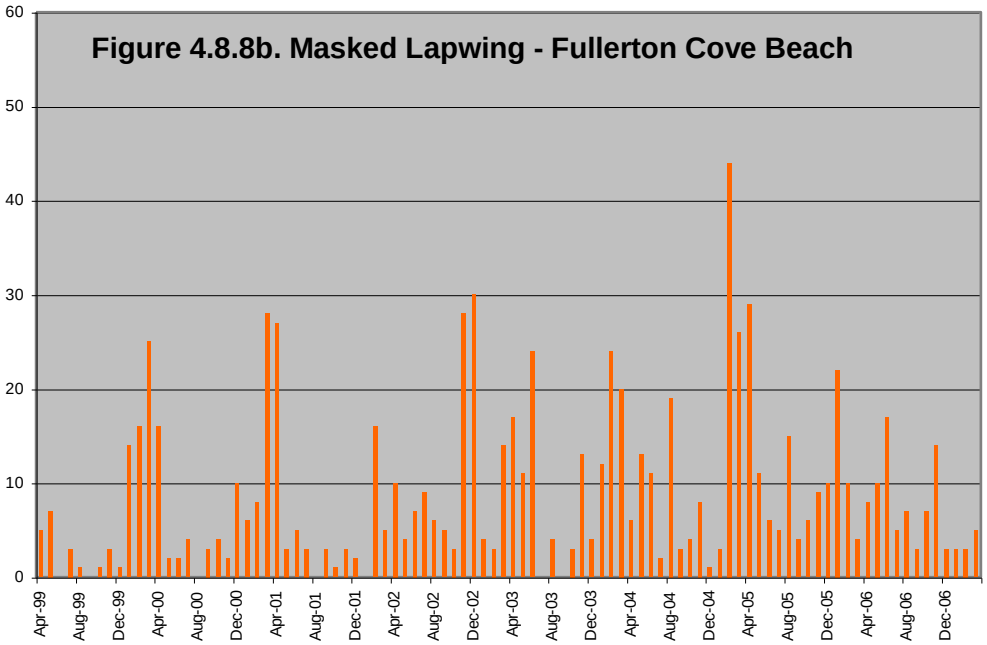


Figure 4.8.8b. Masked Lapwing - Fullerton Cove Beach
60
50
40
30
20
10
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

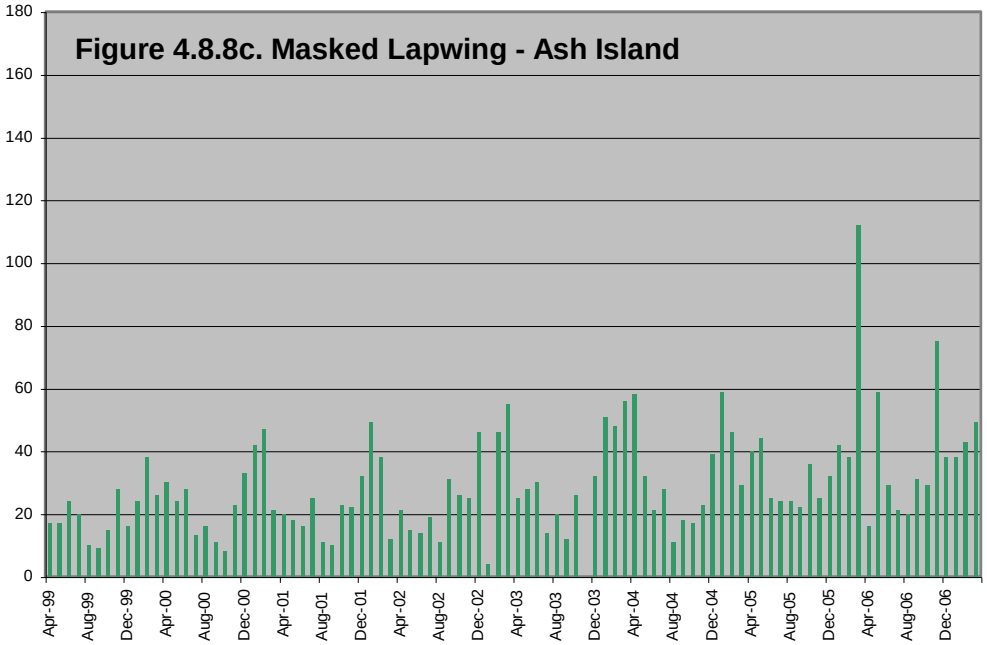


Figure 4.8.8c. Masked Lapwing - Ash Island
180
160
140
120
100
80
60
40
20
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

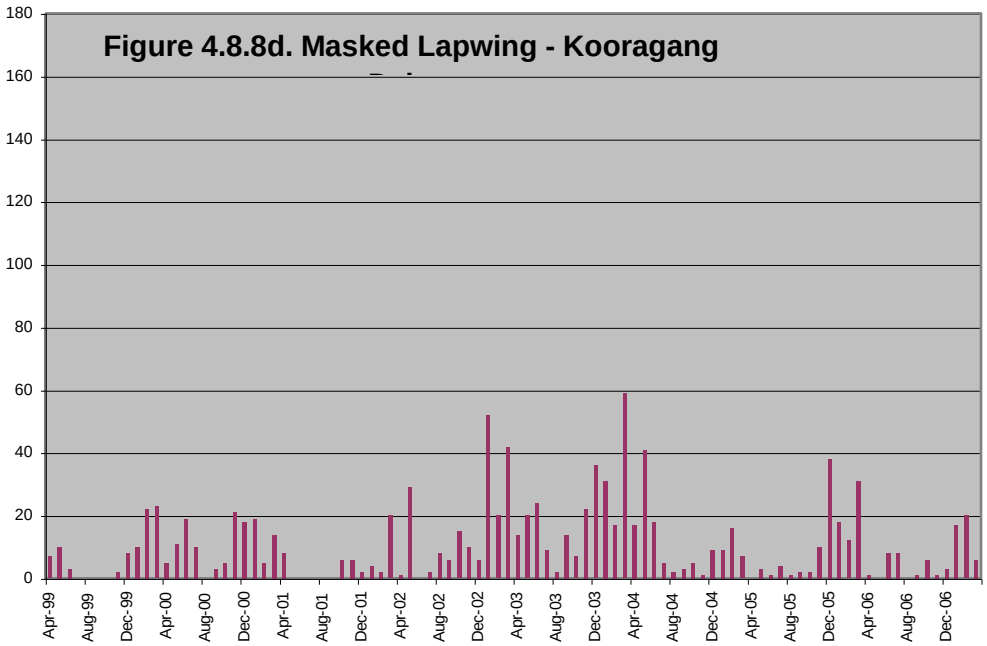


Figure 4.8.8d. Masked Lapwing - Kooragang
180
160
140
120
100
80
60
40
20
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

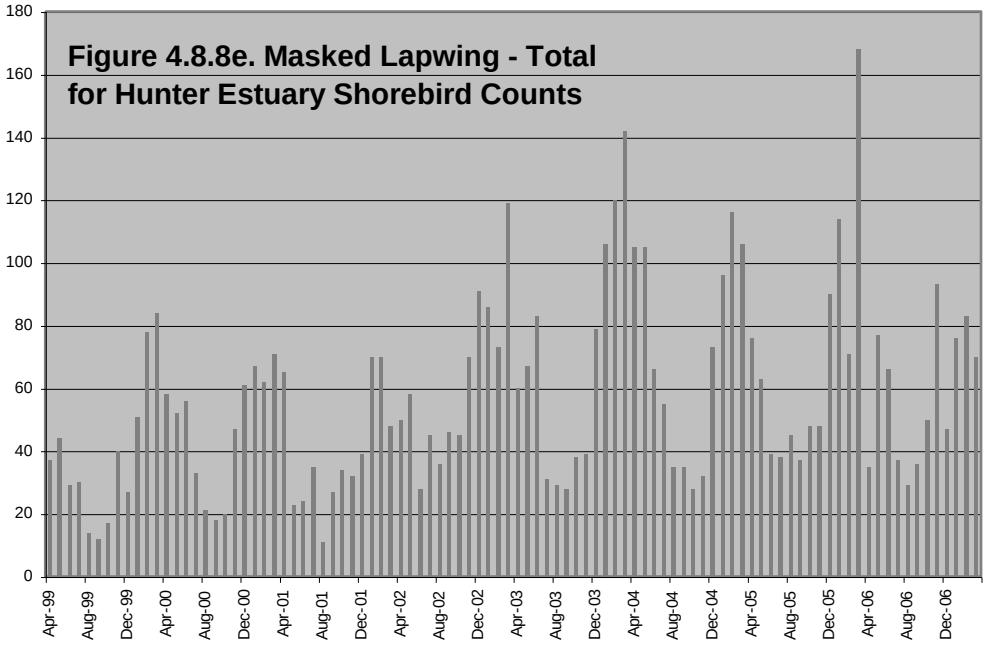


Figure 4.8.8e. Masked Lapwing - Total for Hunter Estuary Shorebird Counts
180
160
140
120
100
80
60
40
20
0
Apr-99
Aug-99
Dec-99
Apr-00
Aug-00
Dec-00
Apr-01
Aug-01
Dec-01
Apr-02
Aug-02
Dec-02
Apr-03
Aug-03
Dec-03
Apr-04
Aug-04
Dec-04
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06

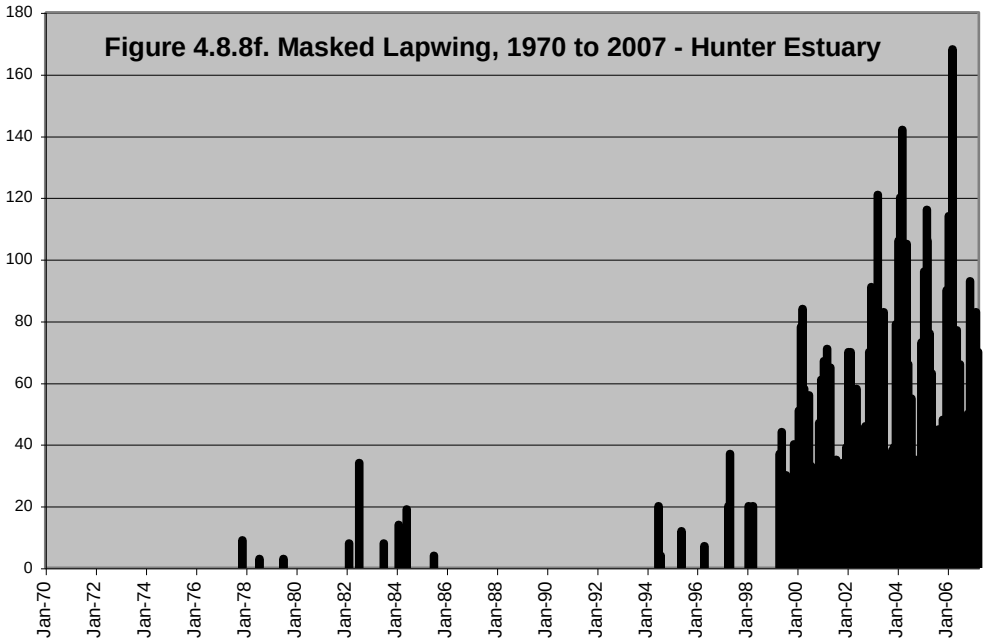


Figure 4.8.8f. Masked Lapwing, 1970 to 2007 - Hunter Estuary
180
160
140
120
100
80
60
40
20
0
Jan-70
Jan-72
Jan-74
Jan-76
Jan-78
Jan-80
Jan-82
Jan-84
Jan-86
Jan-88
Jan-90
Jan-92
Jan-94
Jan-96
Jan-98
Jan-00
Jan-02
Jan-04
Jan-06

## 4.9 GULLS AND TERNS

### 4.9.1 Silver Gull

Silver Gulls are most often recorded in the lower parts of the estuary and along the coast, often in moderate to extremely large numbers. They are more numerous from late spring to early autumn when numbers decrease into the cooler months (**Figure 4.9.1**).

*Notable numbers recorded at:*

Ash Island (2,000+), mainly Swan Pond and Deep Pond
Bedminster Swamp (148)
Big Pond (100)
Deep Pond (204)
Fern Bay (60)
Hexham Swamp (800+)
Hunter Wetlands Centre (2,000)
Kooragang Dykes (700)
Newline Road Swamp (300+)
Stockton Channel (110)
Stockton Sandspit (49)
Stony Point (70)
Swan Pond (103)
Tank Paddock (100+)
Wader Pond (38)
Warabrook Wetland (300)
Woodberry Swamp (1,000+)

*Status:* Common resident. Not recorded breeding in the Hunter Estuary. Nesting colonies at Moon Island off Swansea Heads and Sand Island in Lake Macquarie. Numbers steadily increased from 1999 to 2004 and then decreased to 2007 (**Figure 4.9.1**).

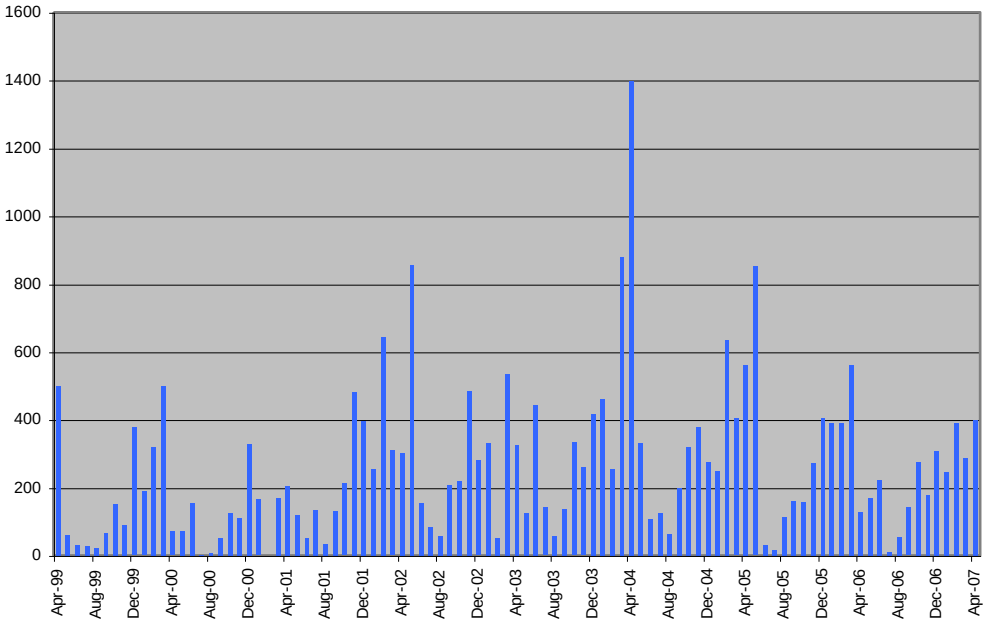



**Figure 4.9.1.** Silver Gull totals for all locations monitored by HBOC's monthly shorebird counts, 1999 to 2007.

### 4.9.2 Gull-billed Tern

Gull-billed Terns mainly inhabit the lower parts of the Hunter Estuary, usually in small to moderate numbers. Apart from a couple of peak counts the number of Gull-billed Terns has remained mostly within the range of 5 to 10 birds since counts began in 1999 (**Figure 4.9.2**). However, the rate of recording has increased slightly. There is a tendency for more birds to be present in the estuary during winter and early spring.

*Notable numbers recorded at:*

Ash Island (50), mainly Swan Pond
Bedminster Swamp (1-5)
Grahamstown Dam (10)
Hexham Swamp (8)
Kooragang Dykes (9)
Kooragang Island (39)
Stockton Sandspit (86)
Tarro Swamp (2)

*Status:* Resident. Not recorded breeding in the Hunter Estuary.

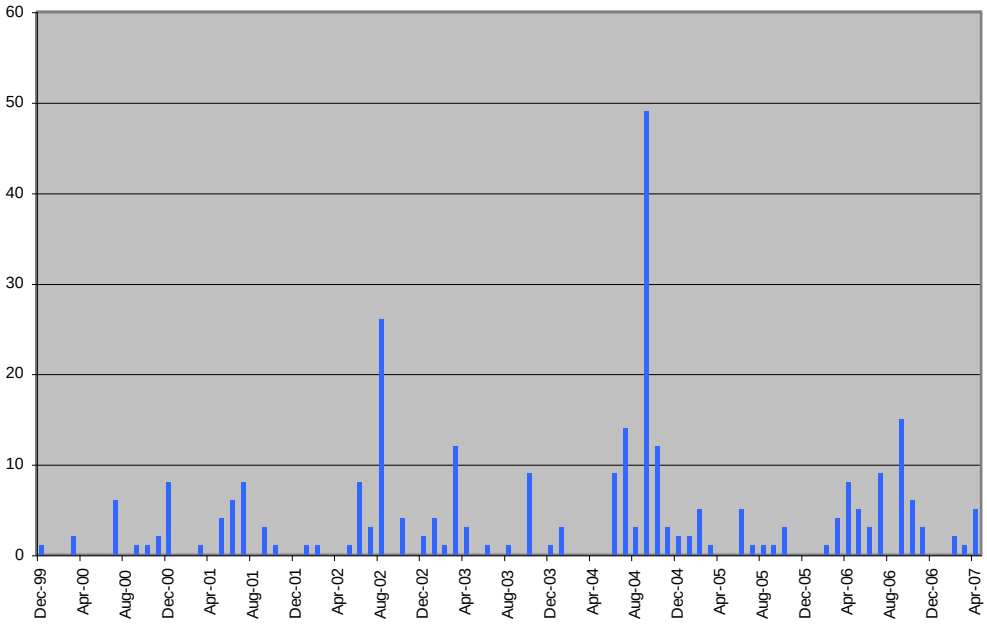



**Figure 4.9.2.** Gull-billed Tern totals for all locations monitored by HBOC's monthly shorebird counts, 1999 to 2007.

### 4.9.3 White-fronted Tern

Usually only small numbers of White-fronted Terns are recorded during the winter months along the coast and at the mouth of the Hunter River.

*Recorded at:*

Horseshoe Beach, immediately inside Southern Breakwater (1)
Newcastle Ocean Baths (17), on the coastal rock platform
Stockton Breakwater (Northern Breakwater) (20)

*Status:* Uncommon winter migrant. Does not breed in the Hunter Estuary.

### 4.9.4 Whiskered Tern

Whiskered Terns are more often observed foraging over freshwater wetlands on the periphery of the Hunter Estuary, usually in small numbers, but sporadically in moderately large numbers.

*Notable numbers recorded at:*

Ash Island (219)
Deep Pond (34)
Grahamstown Dam (150+)
Hexham Swamp (200)
Hunter Wetlands Centre (1-4)
Kooragang Dykes (10)
Kooragang Island (60+)
Stockton Sandspit (6)
Swan Pond (101)
Tarro Swamp (1-5)

*Status:* Bird of passage. Does not breed in the Hunter Estuary.

## 4.10 OWLS

### 4.10.1 Southern Boobook

Southern Boobooks have occasionally been heard on Ash Island, but little else is known about how they use the area.

*Status:* Resident. No breeding records.

### 4.10.2 Barn Owl

A Barn Owl has been observed occasionally roosting in an area of woodland and mangroves fringing Cobbans Creek, close to, and west of, Ramsar Road on Ash Island.

Status: Resident. Recorded nesting at the Hunter Wetlands Centre.

## 4.11 KINGFISHERS

### 4.11.1 Azure Kingfisher

Azure Kingfishers are usually observed as single birds and, rarely, as pairs throughout the Hunter Estuary. Although brightly coloured they are not often seen along their favoured habitat of vegetated creek margins. They are widespread, but the total number in the estuary is probably small.

*Recorded at*

Duns Creek (1), near Fullerton Cove
Hunter Wetlands Centre (2)
Irrawang Swamp (2)
Kooragang Dykes (1)
Pambalong Nature Reserve
Ross Wallbridge Reserve (1)
Warabrook Wetland

*Status:* Resident. Breeding at the Hunter Wetlands Centre, and probably at many other locations.

### 4.11.2 Forest Kingfisher

Single Forest Kingfishers have been recorded a couple of times in the Hunter Estuary, at the Hunter Wetlands Centre and Newcastle Wetlands Reserve.

*Status:* Accidental. Does not breed in the Hunter Estuary.

### 4.11.3 Sacred Kingfisher

Sacred Kingfishers are often seen as singles or pairs and, rarely, in small numbers, throughout the Hunter Estuary.

*Recorded at:*

Fern Bay
Fullerton Cove Beach (2)
Grahamstown Dam (6-20)
Kooragang Dykes (4)
Hexham Swamp (7)
Hunter Wetlands Centre
Irrawang Swamp (3)
Lenaghans Wetland (1)
Long Pond (1)
Market Swamp
Newcastle University Wetland (4)
Newcastle Wetlands Reserve
Pambalong Nature Reserve (6-10)
Seaham Swamp Nature Reserve
Stockton Channel (2)
Stockton Sandspit (3)
Tank Paddock (6-20)
Thornton

Tomago
Warabrook Wetland

*Status:* Usual summer migrant, although many birds stay in the lower Hunter Estuary all winter. Nesting at Tomago, Thornton, Newcastle Wetlands Reserve, Hunter Wetlands Centre, and probably many more locations.

## 4.12 PASSERINE BIRDS

### 4.12.1 Mangrove Gerygone

Mangrove Gerygones are heard more often than seen, but are reasonably common in mangroves throughout the Hunter Estuary.

*Observed at:*

Ash Island (10)
Fish Fry Flats
Fullerton Cove
Hunter Wetlands Centre (1)
Kooragang Dykes (2)
Newcastle Wetlands Reserve
Stockton Sandspit (6+)
Swan Pond (2)

*Status:* Resident. Recorded breeding at Stockton Sandspit, but would be nesting throughout the estuary wherever there are mangroves.

### 4.12.2 White-fronted Chat

White-fronted Chats inhabit coastal wetlands in the Hunter Region and are often seen in small flocks throughout the Hunter Estuary.

*Recorded at:*

Antennae Wetland (10)
Ash Island (80)
BHP Moat (20)
Big Pond (40)
Deep Pond (14)
Fern Bay (1)
Fullerton Cove
Grahamstown Dam (1-5)
Hexham Swamp (6)
Hunter Wetlands Centre
Kooragang Dykes (8)
Kooragang Island (40+)
Long Pond (3)
Market Swamp (5+)
Milhams Pond (5)
Newcastle Wetlands Reserve (1-5)
Pambalong Nature Reserve (1-5)
Phoenix Flats (40)
Sharpies Flat (10)
Stockton Sandspit (24)
Swan Pond (9)
Tarro Swamp (1-5)
Tomago (1-5)
Wader Pond (6)

*Status:* Resident. Breeds in the Hunter Estuary at Ash Island, Kooragang Island and, probably, at many more locations.

### 4.12.3 White-breasted Woodswallow

White-breasted Woodswallows are not wetland-dependant birds, but are often observed around the Hunter Estuary and regularly breed there. Recorded in small to moderate numbers.

*Recorded at:*

Ash Island (10)
BHP Moat (4)
Big Pond (6)
Deep Pond (2)
Fullerton Cove (12)
Grahamstown Dam (6)
Hexham Swamp (2)
Hunter Wetlands Centre (5)
Irrawang Swamp (3)
Long Pond (3)
Market Swamp (20+)
Newcastle University Wetland
Newcastle Wetlands Reserve (20+)
Pambalong Nature Reserve (20)
Tank Paddock (4)
Tarro Swamp (9)
Seaham Swamp Nature Reserve (3)
Stockton Sandspit (2)
Swan Pond (4)
Warabrook Wetland

*Status:* Common summer migrant. Recorded nesting at Hunter Wetlands Centre, Newcastle Wetlands Reserve, Market Swamp, Warabrook Wetland, Pambalong Nature Reserve, Tank Paddock, Irrawang Swamp, Seaham Swamp, BHP Moat and Newcastle University Wetland.

### 4.12.4 Clamorous Reed-Warbler

Commonly present in all reed-fringed freshwater wetlands throughout the Hunter Estuary.

*Recorded at:*

Ash Island (20+)
BHP Moat (4)
Big Pond (3)
Blue-billed Duck Pond (5)
Deep Pond (5)
Hexham Swamp (51)
Hunter Wetlands Centre (20)
Lenaghans Wetland (1-5)
Long Pond (5)
Market Swamp
Newcastle Wetlands Reserve (21-50)
Pambalong Nature Reserve
Seaham Swamp Nature Reserve (6-20)
Tank Paddock (6-20)
Tarro Swamp (6-20)
Warabrook Wetland (20+)
Woodberry Swamp (1-5)

*Status:* Usual summer migrant, although some birds in the Hunter Estuary are resident all year round. Breeds at Newcastle Wetlands Reserve, Market Swamp, Hunter Wetlands Centre, Warabrook Wetland and Pambalong Nature Reserve and, most probably, at many other wetlands.

### 4.12.5 Tawny Grassbird

Tawny Grassbirds are cryptic and probably under-reported from coarse grasslands and saltmarsh habitats throughout the Hunter Estuary.

*Regularly recorded at:*

Ash Island (6-10)
BHP Moat (2)
Big Pond (3)
Blue-billed Duck Pond (1)
Grahamstown Dam (6)
Hexham Swamp (25)
Hunter Wetlands Centre (10)
Irrawang Swamp (2)
Lenaghans Wetland
Milhams Pond (2)
Newcastle Wetlands Reserve (6)
Pambalong Nature Reserve
Seaham Swamp Nature Reserve (2)
Tank Paddock (6-20)
Warabrook Wetland (3)

*Status:* Resident. Nesting at the Hunter Wetlands Centre, probably Stockton Sandspit, and almost certainly at many other locations.

### 4.12.6 Little Grassbird

Little Grassbirds are commonly heard rather than seen around densely vegetated margins of most freshwater wetlands in the Hunter Estuary.

*Often reported from:*

Antennae Wetland
Ash Island (10)
BHP Moat (4)
Big Pond (2)
Blue-billed Duck Pond (1)
Deep Pond (15)
Hexham Swamp (37)
Hunter Wetlands Centre
Lenaghans Wetland (1)
Long Pond (1)
Market Swamp
Milhams Pond (4)
Newcastle Wetlands Reserve (3)
Pambalong Nature Reserve
Seaham Swamp Nature Reserve
Swan Pond (1)
Tank Paddock (6-20)
Tarro Swamp (2)
Warabrook Wetland (6)
Woodberry Swamp (1)

*Status:* Resident. Recorded breeding at Ash Island and Tank Paddock.

### 4.12.7 Golden-headed Cisticola

Golden-headed Cisticolas are numerous and widespread in coarse grassland and reed habitats throughout the Hunter Estuary.

*Often recorded at*:

Ash Island (20)
BHP Moat (4)
Big Pond (20)
Blue-billed Duck Pond (5)
Deep Pond (20)
Hexham Swamp (102)
Hunter Wetlands Centre (50+)
Kooragang Dykes (2)
Kooragang Island (21-50)
Lenaghans Wetland (1-5)
Long Pond (3)
Market Swamp
Milhams Pond (2)
Newcastle Wetlands Reserve (6-20)
Pambalong Nature Reserve (20)
Phoenix Flats
Seaham Swamp Nature Reserve
Stockton Sandspit (6)
Tank Paddock (21-50)
Tarro Swamp
Warabrook Wetland
Woodberry Swamp (6-20)

*Status:* Usual resident. Recorded breeding at the Hunter Wetlands Centre, Newcastle Wetlands Reserve, Ash Island and Warabrook Wetland.

## 4.13 BRIEF SUMMARY – OTHER SPECIES

Three Other Species in the Hunter Estuary, with recorded numbers exceeding 1,000, are listed below (since 1993 when HBOC's Annual Bird Report commenced).

Grey Teal (2,500+, Hexham Swamp; 1,000, Pambalong Nature Reserve; 1,000, Lenaghans Wetland);
Silver Gull (2,000, Hunter Wetlands Centre; 2,000, Ash Island; 1,000, Woodberry; 800, Hexham Swamp; 700, Kooragang Dykes); and
Black-winged Stilt (1,117, Swan Pond; ~ 1,000, Hexham Swamp).

Other Species with notable numbers are listed below:

Black Swan (950, Hexham Swamp)
Hardhead (611, Ash Island; 600, Deep Pond)
Pink-eared Duck (600, Lenaghans Wetland, Tarro Swamp)
Pacific Black Duck (500+, Hexham Swamp)
Australasian Grebe (500, Grahamstown Dam)
Australasian Shoveler (450, Woodberry Swamp)
Eurasian Coot (400, Grahamstown Dam)

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